

TO THE READER.

THE needs of the public have caused the printing and publishing of this book. Many copies of publications purporting to give information upon the subjects treated of in this volume, are annually demanded both by the young and the old who are in search of such knowledge, and to whom, in many cases, the information is of the utmost importance as a means of preserving or restoring health, either in themselves or in those under their care. It is a truth generally acknowledged by informed and intelligent minds, that most of the sufferings from physical derangements and diseases which are endured by the human race, and especially the numerous evils which have their origin in the reproductive organs and functions, are much more the direct result of human ignorance than of wilful folly or natural depravity. This truth, at least so far as its individual application is concerned, is, sooner or later, discovered by almost every one, male and female, by an actual and not unfrequently deplorable experience of the consequences resulting from ignorance. It is then, after unwelcome or dangerous personal experience has led to such discovery, that immediate and vigorous inquiries and demands are made for the information needed,

and it is not unfrequently found that the knowledge, which, if earlier attained, would have proved a complete protection, is acquired too late to be of much practical value. It is a fact more applicable to the human organism and the ills to which it is liable than to any other subject in creation, that an "ounce of prevention is worth a pound of cure," and a very limited knowledge may frequently be effectual in preventing calamities which, if permitted to occur, are wholly incapable of being remedied by all the skill and application of science.

Unfortunately for those in search of the information sought to be furnished in this volume, advantage has been taken of their necessities by the publication of a multitude of different books, of various forms, sizes, and prices, purporting to contain all the information that could possibly be required, while, in fact, they were simply designed as advertising mediums through which cheap publicity could be given to effect sales of some mechanical contrivance, medical nostrum, or some article of questionable propriety. There is, perhaps, not a publisher nor bookseller in the entire country who has not received many hundreds of applications for books purporting to contain the information here given, and it is undoubtedly true that most, if not all of them, have many times regretted the necessity which, from their position as booksellers, almost compelled them to furnish publications which their judgment condemned, simply because no such work as was required could be found in the

market. These facts have induced the publisher of the volume here presented to place within the reach of all, so far as circumstances rendered the matter practicable, the needed information in such a manner as to be alike easy of comprehension and free from objection.

In the preparation of this treatise many authorities had of necessity to be consulted. These have been fully credited, as far as was practicable, in the course of the work, and it only remains to make special acknowledgments here to the works of Drs HOOPER, BELL, and LEIDY. The illustrations made use of, as being the best adapted to convey intelligible information, because distinctly and artistically showing the parts designed to be illustrated, are mainly from Professor LEIDY's *Human Anatomy*, published by Lippincott & Co., Philadelphia. These gentlemen have each acquired a not undeserved distinction in their profession, and are fully recognized as authorities.

To the readers of this volume, male and female, it is here especially said, that the main object and purpose in the preparation of this treatise has been, to provide them with the means through which they may be enabled to inform and enlighten themselves upon all points, calculated to prove practically useful and beneficial to them, connected with the reproductive organs and their functions, and the diseases to which these organs are more commonly subject. In order to arrive at an approximately just comprehension of diseases, it is necessary that

readers should inform themselves as fully as practicable upon the parts affected. By a careful examination and study of the illustrations and the text, they will be enabled to acquire accurate knowledge of the location, construction, and functions of all the parts, and in this manner become qualified to understand why and how they are affected by disease.

It is here particularly added, that readers must not expect that by a mere cursory perusal of this book—by a hurried glance over its pages—they can attain a useful knowledge of its contents, for it is not by such superficial reading that the human mind receives and comprehends definite facts and particulars; but if they will read and study with care, they will soon perceive that the book contains but few useless words, and that everything in it is of an instructive character. In its preparation it was not the intention of the compiler nor publisher to satisfy the morbid and inquisitive curiosity of any one, but to provide the information for which an extended necessity is well known to exist.

DR. CLARK'S MARRIAGE GUIDE.

CHAPTER I.

THE HUMAN BODY.

ANATOMISTS divide the human body into three parts—the head, the trunk, and the extremities. Each of these parts is divided into certain *regions*, so that particular parts or portions of the body may be definitely designated, the situation of disease pointed out, and the application of remedies directed. The term is generally applied to some external portion of the body, beneath or under which is located some special organ or part having its appropriate use.

THE HEAD.

The HEAD is divided into two parts—the scalp, or hairy part, and the face.

The regions of the scalp are five in number—the crown of the head, the fore part of the head, called *sinciput*; the back part, called *occiput*; and the two sides. The FACE has the regions of the forehead, the temples, the nose, the eyes, the mouth, the cheeks, the chin, and the ears.

THE TRUNK.

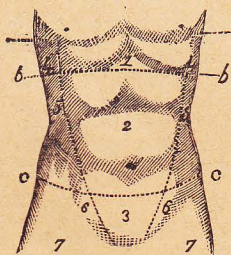
The TRUNK is divided into three principal parts—the neck, the thorax, and the abdomen.

The NECK is divided into the front or *anterior* region, the back or *posterior* region, and the side

or *lateral* regions. In the anterior region, in men, is an eminence, commonly called Adam's apple, so named from an old notion that a portion of the forbidden fruit eaten by Adam in the Garden of Eden stuck fast in his throat, thus causing this prominence in his male descendants. It is produced by the *larynx*, the organ of voice, which, in consequence of its being developed to a less degree in females, is not externally evident.

The **THORAX**, or chest, which embraces that portion

FIG. 1.



ABDOMINAL REGION.

Above the line *bb* [1], epigastric region; below *cc*, hypogastric region; space between *bb* and *cc* [2], umbilical region; space outside vertical lines upper part [4] hypochondriac region; right and left of umbilical [2], lumbar regions [5 6]; right and left of hypogastric region [6 6], iliac regions; region of the pubis [3]; 7 7, pelvis.

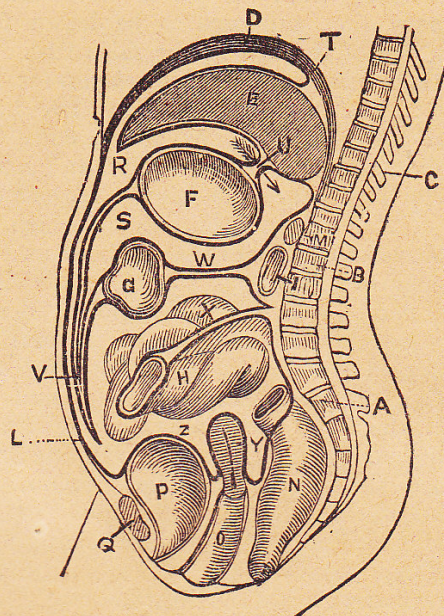
part of the abdomen that lies over the stom-

ach, reaching from the pit of the stomach to an imaginary line supposed to be drawn from the extremities of the last of the false ribs. Its sides form the right and left *hypochondriac* regions. Second: The parts lying about two inches all around the *umbilicus*, or navel, constitute the *umbilical* region. On the right and left of the umbilical region are the *lumbar* regions or loins. Third: The *hypogastric* region, which reaches from above the pubes to within about an inch and a quarter of the navel. Its sides constitute the *ilia*, or flanks, and the *iliac* regions. Beneath or under the external surface, the several regions are occupied as follows: 1. The stomach occupies the left hypochondriac, epigastric, and a small part of the right hypochondriac regions. When it is distended, and the small intestine is empty, it encroaches on the umbilical region. 2. The small intestine, curved or rolled into a mass, occupies the umbilical region and the contiguous borders of the surrounding regions. 3. The large intestine commences at the right iliac region, ascends through the right lumbar region into the right hypochondriac, thence crosses the boundary of the epigastric and umbilical regions to the left hypochondriac region, and then descends through the succeeding lumbar and iliac regions, entering the pelvis at its back part. 4. The liver occupies the right hypochondriac region, and extends across the epigastric region into the left hypochondriac region. 5. The spleen is situated deeply in the left hypochondriac region. 6. The pancreas extends from the right to the left hypochondriac regions, crossing through the deep part of the epigastric region. 7. The kidneys occupy the deep part of the lumbar regions. 3. The urinary bladder occupies

The **ABDOMEN** is divided into the fore part or *anterior* region, the hind part, or *posterior* region, and the flanks, or *lateral* regions. The fore part, which is strictly the abdomen, or belly, being very extensive, has a number of subdivisions. First: The *epigastric* region, which is that

ach, reaching from the pit of the stomach to an imaginary line supposed to be drawn from the extremities of the last of the false ribs. Its sides form the right and left *hypochondriac* regions. Second: The parts lying about two inches all around the *umbilicus*, or navel, constitute the *umbilical* region. On the right and left of the umbilical region are the *lumbar* regions or loins. Third: The *hypogastric* region, which reaches from above the pubes to within about an inch and a quarter of the navel. Its sides constitute the *ilia*, or flanks, and the *iliac* regions. Beneath or under the external surface, the several regions are occupied as follows: 1. The stomach occupies the left hypochondriac, epigastric, and a small part of the right hypochondriac regions. When it is distended, and the small intestine is empty, it encroaches on the umbilical region. 2. The small intestine, curved or rolled into a mass, occupies the umbilical region and the contiguous borders of the surrounding regions. 3. The large intestine commences at the right iliac region, ascends through the right lumbar region into the right hypochondriac, thence crosses the boundary of the epigastric and umbilical regions to the left hypochondriac region, and then descends through the succeeding lumbar and iliac regions, entering the pelvis at its back part. 4. The liver occupies the right hypochondriac region, and extends across the epigastric region into the left hypochondriac region. 5. The spleen is situated deeply in the left hypochondriac region. 6. The pancreas extends from the right to the left hypochondriac regions, crossing through the deep part of the epigastric region. 7. The kidneys occupy the deep part of the lumbar regions. 3. The urinary bladder occupies

FIG. 2.



REFLECTIONS OF THE PERITONEUM IN A VERTICAL SECTION OF THE ABDOMEN, the peritoneum being represented by the thick, black line.

A, Upper segment of the triangular bone which forms the posterior part of the pelvis, called the *sacrum*.

B, *First lumbar vertebræ*. The lumbar vertebræ, or vertebræ of the loins, are five in number, and extend from the thorax to the pelvis.

C, *Dorsal vertebræ*, twelve in number, extending from the neck to the loins.

D, *Diaphragm*, or muscle separating the thorax, or chest, from the abdomen.

E, *Liver*, the largest gland in the body.

F, *Stomach*, the musculo-membranous reservoir for the reception and digestion of food.

G, *Transverse colon*. The greater portion of the large intestine is called the colon. The colon proceeds towards

FIG. 2.

the liver, by the name of the *ascending portion of the colon*; having reached the liver it forms a *transverse arch*, the *transverse colon*, across to the other side; and then descends (forming a peculiar convolution, called the *sigmoid flexure* because of its resemblance to the Greek letter sigma) into the pelvis, where the gut is called the *rectum*.

H, *Small intestine*.

I, The first portion of the small intestine, called the *duodenum*, about twelve fingers' breadths in length.

M, *Pancreas*. A whitish conglomerate gland, situated deep in the abdomen, beneath the stomach, the secretions of which largely serve in the process of digestion.

N, *Rectum*.

O, *Vagina and Uterus*.

P, *Urinary bladder*.

Q, *Pubis*.

R, *Greater cavity*.

S, *Lesser cavity*. The peritoneum forms a complete sac, having no termination, and the inside of this sac is called the *cavity of the peritoneum*, and is divided into the *greater and lesser cavities*. The arrow indicates the communication of the greater and lesser cavities.

T, *Section of a lateral ligament of the liver*.

U, *Gastro-hepatic omentum, or little omentum*.

V, *Great omentum*. The omenta form a fatty membranous covering of the bowels, attached to the stomach, and lying on the face of the intestines. They are distinguished as the *great omentum* and *little omentum*.

W, *Transverse mesocolon*.

X, *Mesentery*. A membrane, formed by a duplicature of the peritoneum, in the cavity of the abdomen, attached to the vertebræ of the loins, and to which the intestines adhere. It consists of three parts: one uniting the small intestines, properly called the *mesentery*; another connecting the colon, called the *mesocolon*; and a third attached to the rectum, called *mesorectum*.

Y, *Recto-uterine pouch*.

Z, *Vesico-uterine pouch*. From the pubes the peritoneum ascends upon the bladder, descends again behind it, and there, making another reflection to mount over the rectum and form the mesorectum, it leaves betwixt the rectum and bladder a particular *sacculus* or *pouch*. In the female, the uterus intervenes, and this pouch is divided into two portions which are called the *recto-uterine* and *vesico-uterine pouches*.

L, *Portion of peritoneum lining the wall of the abdomen*.

the pelvic cavity. When distended it rises into the hypogastric region.

A very strong and extensive serous membrane, called the PERITONEUM, lines the walls of the abdomen, from which it is reflected upon the different organs or parts, all of which are surrounded by it. By its means the numerous organs or parts of the abdominal region are protected against injury from motion or concussion, and firmly held and supported, so that they cannot be misplaced by their own weight.

The region of the PUBES is just below the abdomen, being the part covered with hair, in women called the *mons veneris*.

Below the pubes, in men, are the *scrotum* and *penis*—in women, the *labia pudendi* and the *rima vulvæ*. The space between the genitals and *anus* is called the PERINEUM.

THE EXTREMITIES.

The extremities are divided into the *superior* or *upper*, and the *inferior* or *lower*.

The SUPERIOR EXTREMITY has the top or shoulder, under which is the arm-pit, the arm; the fore-arm, in which are the bend and the elbow; and the hand, which has the palm, the back, the wrist, and the fingers.

The INFERIOR EXTREMITY embraces the thigh; the leg, in which are the knee, the ham, and the calf; and the foot, in which are the outer and inner ankle, the back, the sole, and the toes.

CHAPTER II.

MALE GENERATIVE ORGANS.

THE organs of generation in man are placed in the abdominal and pubic regions, and just below the latter, being in part external and in part internal. The parts which constitute the male generative organs are the *testes*, or *testicles*, the *penis*, and the *vesiculæ seminales*, or *seminal vesicles*. With these are connected the two tubes together called the *vasa deferentia*, or *deferential tubes*, and also known as the *spermatic ducts*; the *spermatic cord*; the *urethra*; the *prostate gland*; *Cowper's glands*; and certain *excretory ducts* and *canals*. The external organs are the *testes* and the *penis*.

THE TESTES.

The TESTES, or TESTICLES, the organs which secrete the semen, are the two glandular bodies, suspended by the spermatic cord beneath the root of the penis and within the scrotum, one on each side. They are oval in shape, slightly flattened, one end being a little larger than the other. Each testis is composed of numerous small vessels and tubes, of veins, nerves, and lymphatics, or absorbents, all of which are united together by cellular tissue and fibrous membrane, and enveloped by a strong, white, and dense membranous coat, called the *tunica albuginea*, or *peritestis*, which immediately surrounds and adheres to the body or substance of the testis, and forms its innermost covering. The outer surface of this covering is smooth—its inner rough and uneven, having branches or leaves extending from it, to a certain depth, into the body of the testis, dividing it into sections or lobes.

FIG. 3.

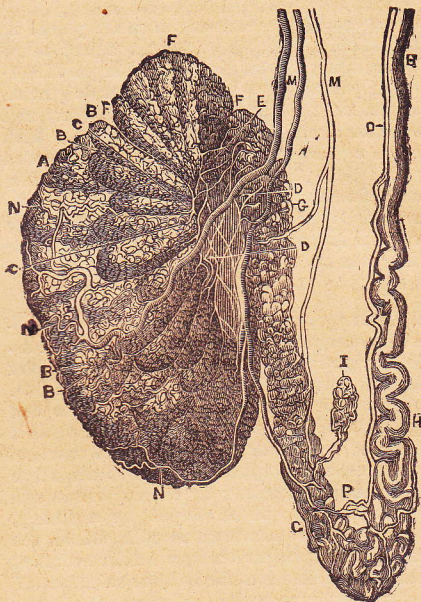


FIG. 3.

This figure shows the glandular structure of the testis, deprived of its tunics or coverings.

A, The testis. The anterior oval part of the testis, as distinguished from its posterior elongated part, called the epididymis.

B B B, Lobules. Each lobule consists of from one to three seminiferous tubules, or seminal tubes, occasionally branching and exceedingly convoluted. There are about four hundred and fifty lobules in each testis. Their shape is conical; the diameter of the tubes of which they are composed about the one-two-hundredth part of an inch. The total length of this tubular structure is about three-quarters of a mile.

C C, Tubuli recti. At the narrow extremity of the lobules, the seminiferous tubules end in straight tubes, bundles of which, uniting into larger vessels, are designated tubuli recti.

D D, Rete vasculosum. Formed from half a dozen to a dozen of the straight tubes, or tubuli recti, variously anastomosing, or uniting and blending, with one another and dividing. They empty into

E, The vasa efferentia, or efferent canals, twelve or eighteen in number, which emerge and pass out of the testis to the head of the epididymis, in which they become convoluted, or rolled together, and form

F F F, The coni vasculosi, or spermatic cones, which successively end in a single, coarse, and much convoluted tube, forming the body and tail of

G G, The epididymis, which empties into

H H, The vas deferens.

I, Vas aberrans. A spermatic cone, an appendix to the epididymis, not attached to the testis. It usually but not always exists.

M M, Branches of the spermatic artery.

N N N, Ramification on the testis.

O, Defferent artery.

P, Anastomosis, or union, between the arteries *M* and *O*.

The small vessels and tubes constitute the main or larger part of the testis. These small vessels wind and turn one way and the other, and are curved or rolled together into little heaps which are separated from each other by cellular partitions. In these partitions are the small tubes or ducts, called seminal tubes, which receive the semen from the small vessels, and together form a net-work which is attached to the tunica albuginea. The small vessels are thousands of sub-divisions of a branch of the spermatic artery, coming down from the abdomen to each testis, the extremities of which appear to be continuous with the seminal tubes. A branch of the spermatic vein also connects with each testis, having similar sub divisions, by which the effete or refuse blood is returned. The vessels and tubes of the testes, taken separately, are extremely minute—so much so, that a Professor in the University of Edinburgh estimated the number of the seminal tubes alone in one testis at sixty-two thousand five hundred, and their length at five thousand two hundred feet. From the net-work formed by these tubes some twenty or more vessels arise, all of which, after numerous twistings and turnings, ascend to the posterior margin of the testis, and there unite into one common duct forming a hard body called the *epididymis*. The *epididymis* is a hard, vascular, oblong substance, which adheres to the testis by its two extremities, its middle part being free and forming a bag to which the *tunica vaginalis* is attached. The *tunica vaginalis* is a strong simple membrane loosely investing the testis and spermatic cord, being a continuation of the peritoneum through the inguinal ring. Its inner surface is perfectly smooth, gliding easily over the smooth outer surface of the tunica

albuginea and aided by the mobility of the cellular membrane of the dartos, it forms a protection for the testes, and preserves them from bruises and strokes to which they would be exposed if it were more firmly attached. The *tunica vaginalis* and the tunica albuginea form the investing coats of the testis, and are in some respects quite dissimilar, though in general very much alike, one being continued into the other, and both being prolongations of the peritoneum.

From the epididymis arises the *vas deferens*, or *deferential tube*, a cylindrical tube about one-tenth of an inch in diameter and about a foot and a half in length, terminating in the seminal vesicles. It is very much twisted near the epididymis, but finally becomes straight, ascends into the abdomen with the spermatic cord, rises nearly to the top of the bladder, behind which it descends to and becomes connected with the ducts of the seminal vesicles. When removed and its numerous twists straightened, it is said to be about thirty feet in length. Its use is to convey the semen, secreted in the testis and brought to it by the epididymis, into the seminal vesicles.

How the semen is formed is not known, but it is supposed to be made from the pure blood brought to the testes by the branches of the spermatic artery. When the small vessels and the tubes of the testis are microscopically examined the blood in the former is gradually lost sight of and the semen in the latter is seen—the blood of the one apparently merging or changing into the semen of the other. From the seminal tubes of the testis the semen is conducted through the epididymis to the *vas deferens*. The *vas deferens* conducts it to the seminal vesicles. From the seminal vesicles it passes down

FIG. 4.

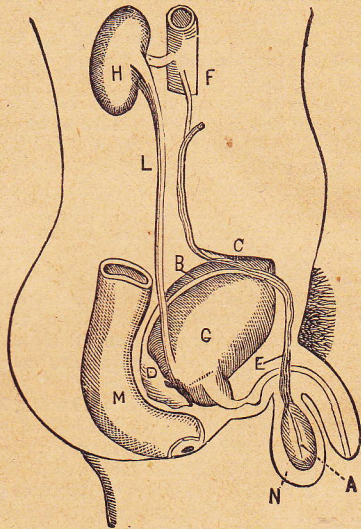


FIG. 4.

A, One of the *testes*.

B, The white line designates the *vas deferens*—one of the deferential tubes, which commences at the extremity of the epididymis, and ascends into the abdomen with the spermatic cord, *E*, from which it separates at the point below *C*, and descends to and becomes connected with the duct of the seminal vesicle.

D, *Seminal vesicle*.

E, *Spermatic cord*.

F, *Aorta*. The great artery of the body, which arises from the left ventricle of the heart, forms a curvature in the chest, and descends into the abdomen. Its branches supply the testes with blood.

G, The *bladder*.

H, One of the *kidneys*. The kidneys are two glandular organs, one of which is situated in each lumbar region. Their use is to secrete the urine.

L, One of the *ureters*. The excretory ducts of the kidneys are called the ureters, and consist of two cylindrical tubes, each from fifteen to eighteen inches long and having a diameter about the size of an ordinary goose quill. They convey the urine from the kidneys to the bladder.

M, The *rectum*.

N, The *scrotum*.

the ejaculatory ducts through the prostate gland into the urethra and is ejected from the body.

The *spermatic cord* consists of the artery which brings blood to the testis; of the veins which return it; of the vas deferens; of the cremaster muscle; and of nerves and lymphatics which are essential to the structure of every part. This cord of vessels comes down from the abdomen, passes by the ring of the abdominal muscle, and is fixed into the upper and back part of the testis. It can be readily felt externally. It is covered by two membranous coats, forming a sheath in which the vessels are enclosed, the outer one of which is very firm and serves to protect the vessels against injury from compression.

In the fœtus the testes are always contained in the abdomen, descending into the scrotum shortly before birth. Previous to the age of puberty they are incapable of performing all their functions, and in old age they are rendered less active, though not necessarily losing their power. From the age of puberty to that of fifty they are regarded as most active, but many instances are known where men over eighty years of age, who had married young women, became fathers.

In the adult the size of the testes correspond very nearly with that of an ordinary pigeon's egg, and the left one usually hangs a little lower than the right. Their weight is about three-quarters of an ounce each. Their size and weight, however, vary very much in different individuals, but the performance of their functions seems to have but little dependence upon either, provided they have neither been diminished nor enlarged by disease or evil habits. In early age the growth and expansion of all parts of the body largely depend upon their

proper development, and during all the subsequent stages of life their natural state and healthful action exercise a very powerful influence over the physical, intellectual, and moral condition of the individual.

The *scrotum* is a muscular, cutaneous pouch or bag, which is suspended from the pubic bone and encloses the testes. From the root of the penis, upon the surface of the scrotum, and directly in the middle, a line passes inferiorly to the anus, which is called the *raphe scroti*, and makes a partition or septum dividing the scrotum into two distinct parts, or cellular beds, one for each testis. The external skin of the scrotum is of the same structure as on other parts of the body, but thinner and more sensitive, and of a darker hue. The inner portion of the skin is of a pale red color, and constitutes what is called the *dartos*, by some anatomists classed as a muscle, while others regard it simply as a condensation of the cellular membrane lining the scrotum. It possesses muscular power, being the means by which the skin of the scrotum is corrugated or wrinkled, and relaxed. From the influence of cold, or certain states of the mind, it contracts and throws the skin on each side of the raphe into wrinkles, and from the effects of heat, or other depressing causes, it relaxes and the scrotum becomes elongated. Immediately under the dartos is the *cremaster muscle*. This muscle arises from a ligament in the abdomen, passes through the abdominal ring, and over the spermatic cord, of which it forms a part, and finally spreads its fibers over the tunica vaginalis. By it the testis is suspended and drawn up and compressed. In some persons it is under the control of the will, enabling them to draw up the testis and lower it at pleasure.

but generally its action is involuntary. Beneath the cremaster muscle is the tunica vaginalis, which is in close union with the tunica albuginea.

In a healthful state of manhood the scrotum is always partially contracted, corrugated, or drawn into folds. In debility, disease, or old age, it becomes relaxed, so as to allow the testes to pull upon the cord. Besides this simple corrugation and relaxation it has also an oblique and irregular motion from side to side. Its relaxation is at all times an evidence of ill-health, or an indication of a want of healthy secretion of the glands within. In old age, and in persons of a bad habit of body its relaxation becomes permanent. In children the condition of the scrotum is frequently an important indication of their state of health.

Individual peculiarities connected with the testes, some of which are of a remarkable character, are occasionally met with. Cases are reported where they exceeded two in number, and where but one, or none at all, existed. These cases, however, are very rare. Occasionally the epididymis is enlarged and hardened, giving to the scrotum the appearance of containing three testes. In those cases where but one appears to exist, an examination generally reveals that the missing organ is retained in the abdomen. A similar retention of both the organs in the abdomen has also been ascertained where none existed in the scrotum. The rarity of these occurrences, however, is illustrated by the fact that in ten thousand eight hundred recruits examined by Dr. Marshall, but six cases were met with in which the left testis had not descended into the scrotum, five in which the right had not descended, and one in which neither had descended. Such conditions of the organs must be regarded as

malformations, or imperfections, which should be remedied, if possible, though the organs themselves may be perfectly healthy, and fully discharge all their functions. Cases where no testes exist, either in the abdomen or scrotum, are extremely rare, and are always attended by non-development of the other organs of the body and incompleteness of the general system.

Cases have also been met with where both organs had grown together, thus appearing in the scrotum as but one.

It is stated, and the authorities are not to be disputed in the present condition of our knowledge, that in the organizations of some of the rude tribes of men scattered over the southern hemisphere, but one testis is found to exist. Some physiologists suppose that this fact is due to a general practice of removing one of the organs, while others affirm that it is exclusively the work of nature.

Individual instances are also met with where the testes are very small or very large—sometimes not exceeding in size an ordinary marble, and yet being endowed with ample power; and then, again, they have been known to weigh four ounces each, and yet were in a healthy condition. In some youths they are very tardy in developing and growing, while in others they develop with great rapidity. In all cases, however, where an unusual condition of the organs is apparent it should be speedily ascertained whether such condition is natural or the result of disease.

THE PENIS.

The PENIS, the urethra of which forms the canal for conveying the urine from the bladder and the seminal fluid into the female organs, is placed in front of the pubes, and hangs down before the

FIG. 5.

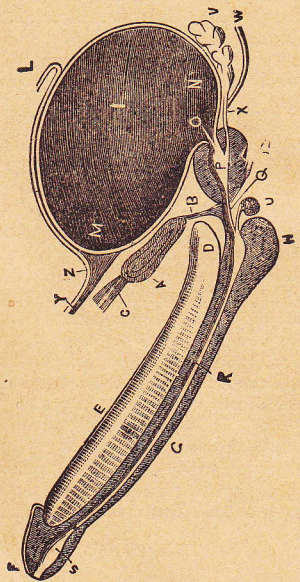


FIG. 5.

VERTICAL SECTION OF THE PENIS AND BLADDER.

A, Pubic symphysis. The root of the penis is its point of attachment to the pubic arch and pubic symphysis.

B, Triangular ligament—a strong membrane extended across the arch of the pubis.

C, Abdominal muscles.

D, Crus of the right cavernous body; the two crura form the posterior extremities of the corpora cavernosa.

E, Corpus cavernosum, or cavernous body.

F, Glans.

G, Corpus spongiosum, or spongy body.

H, Bulb of spongy body.

I, Bladder.

M, Summit of bladder.

N, Fundus, or base of bladder.

O, Neck of bladder.

P, Prostatic portion of urethra.

Q, Membranous portion of urethra.

R, Spongy portion of urethra.

S, Navicular fossa.

T, Prostate gland.

U, One of Cowper's glands (Suburethral gland).

V, Right seminal vesicle.

W, Vas deferens, one of the deferential tubes, or spermatic ducts.

X, Ejaculatory duct.

Y, Urachus, a fibrous cord continued from the summit of the bladder in the direction of the navel.

Z, Peritoneum.

L, Recto-vesical fold of the peritoneum.

scrotum. When relaxed it is nearly cylindrical, but when distended it becomes partially triangular, its angles being rounded. It is divided into three parts—the *root*, the *body*, and the *head*, or *glans*, and is composed of common integuments, a cavernous substance, called the *corpus cavernosum*, or *cavernous body*, and a spongy substance, called the *corpus spongiosum*, or *spongy body*.

The corpus cavernosum forms the upper and larger part of the body of the penis, and is really one part, though generally divided into two, called the *corpora cavernosa*, or *cavernous bodies*, because of a partition or septum which divides it in the middle. These cavernous bodies have a very strong, dense, fibrous wall, which has a great degree of elasticity, but at its utmost extension powerfully resists the further distention with blood. Their posterior extremities are called *crura penis*.

The corpus spongiosum forms the lower part of the penis, through which the canal called the urethra takes its course, and is therefore also called *corpus spongiosum urethra*. It extends the whole length of the penis, being enlarged at the back part into the *bulb*, and at the fore part into the *glans* where it forms the bulbous head of the penis which crowns the conical extremity of the cavernous body. Like the cavernous body, it is provided with an exterior fibrous, though thinner and more delicate, wall.

The cavernous and spongy bodies, together, constitute the main portion of the penis. They are both very porous, or rather spongy, consisting principally of blood vessels and cells which communicate with each other, like the cells of a sponge, and connect with the larger arteries and veins. When the organ is relaxed these vessels and cells

the urethra contains a number of triangular mouths, which are the openings of the excretory ducts of the mucous glands of the urethra, and bedew it with mucus. Its walls possess the quality of extensibility to a remarkable degree—so much so that in the adult person a catheter one-quarter of an inch in diameter can be introduced through the whole length of the canal without much difficulty, and it can gradually be made to receive an instrument twice as large. The average length of the urethra may be stated to be eight or nine inches.

THE PROSTATE GLAND is a large and firm body placed between the neck of the bladder and the bulbous part of the urethra. It is round at the base, where it encircles the neck of the bladder, and pyramidal forward. It has a lateral division forming it into two lobes, and has, therefore, been sometimes called double; and at the lower part, and betwixt the bladder and the seminal vesicles, the third portion of the gland is situated. The urethra passes through the prostate gland towards its upper surface, so that the gland is more prominent downward, and can be distinctly felt by the point of the finger *in ano*. From each lobe there are small follicles opening into the urethra. The gland presents a whitish appearance, and its texture is a compact spongy substance. In the adult person it is about an inch and a half in length, almost the same in breadth, and about three-quarters of an inch in thickness. Its uses are not perfectly understood. It secretes a ropy, milky fluid which unites with the seminal fluid and is discharged with it during coition. The uses of this fluid, and its effects upon the semen, are unknown. The prostate gland is largely subject to inflammation and disease. In the present unsatisfactory state of our knowledge the

diseases to which it is subject are frequently exceedingly difficult to cure.

COWPER'S GLANDS, named from William Cowper, a distinguished physician of the seventeenth century, who first described them, are three large muciparous glands, two of which are found before the prostate gland under the accelerator muscles of the urine, and the third more forward before the bulb of the urethra. They are also called *suburethral glands*. These glands are spherical in shape, have a pinkish color, and are about one-fourth of an inch in diameter. They secrete a viscid mucous fluid, which is excreted during coition, but, as in the case of the secretion of the prostate, its uses are unknown.

Peculiarities are not unfrequently found in the development of the penis. Occasionally there is almost no development of the organ, while the other genital organs are perfectly developed and fully perform all their functions. Cases have been met with where the organ remained in the condition in which it was found at birth, while the rest of the system had expanded in a natural manner and to natural dimensions. Instances are reported where its development had apparently been arrested in the fetus, the child, at birth, being deprived of the organ altogether, and finally growing to manhood with nothing but a slight, warty elevation occupying the place of the organ. Cases are also reported where it had grown to a considerable length, but remained small and flaccid, and incapable of performing all its functions. Considerable attention and ingenuity have been devoted by the profession to devise means for removing the conditions enumerated. These efforts have been attended by a remarkable degree of success, so that in many cases

the imperfect organ can be largely or fully developed.

In occasional instances the organ is grown or attached to the scrotum, or other neighboring parts, but difficulties of this kind can generally be fully remedied by the surgeon.

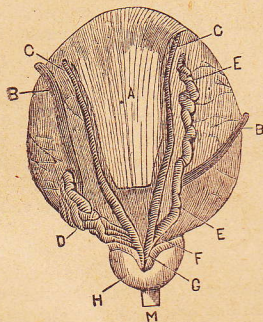
In some cases the prepuce is of such length as to cover the entire glans, while in others it is too short at the fold forming the frænum, and causes annoyance during erection, sometimes rupturing or breaking, and resulting in great pain and considerable loss of blood. This difficulty is remedied by severing the cord—an operation which is quite simple and not attended by much pain.

THE SEMINAL VESICLES.

The VESICULÆ SEMINALES, or *seminal vesicles*, are two oblong membranous bodies placed at and adhering to the under surface of the *fundus*, or *base*, of the bladder. The peritoneum does not descend far enough betwixt the bladder and the rectum to cover or invest them, and they are therefore involved in the cellular texture, and covered with strong fibers, and are also subject to the compression of several muscles. Each vesicle is about two inches long and half an inch broad, and they are distinguished as the right and left seminal vesicles. They appear like simple bags when seen from without, but examinations have shown them to consist of a coarse tube, from three to four inches in length, which is repeatedly folded upon itself and thus formed into a mass. Their posterior points are large and round, and some distance apart; their anterior points are contiguous to each other, and sink into the back part of the prostate gland, terminating in small ducts which

join with the deferential tubes to form the ejaculatory ducts. This junction is effected at the extremities of the deferential tubes, and the ducts and deferential tubes form the *ejaculatory ducts*, which are nearly an inch in length, pass through the prostate gland side by side, and terminate in the urethra, opening by distinct mouths on the surface of the verumontanum.

FIG. 6.



POSTERIOR VIEW OF THE FUNDUS OF THE BLADDER.—*A*, peritoneum, extending as far down as the transverse line. *B B*, Ureters. *C C*, Vasa deferentia, or spermatic ducts. *D*, Left seminal vesicle. *E E*, Right seminal vesicle, laid open so as to show its tubular character. *F*, Duct of right seminal vesicle, joining the vas deferens, or spermatic duct, to form *G*, the ejaculatory duct. *H*, Prostate gland. *M*, Membranous portion of the urethra.

them by the deferential tubes, and are supposed to exercise an influence upon it which thickens it.

CHAPTER III.

FEMALE GENERATIVE ORGANS.

THE generative organs of the female are in part outside and in part inside of the pelvis, and are therefore divided into external and internal. The external organs consist of the *mons veneris*, the *labia*, the *nymphæ*, and the *clitoris*, and are all comprised under the general name of the *vulva*.

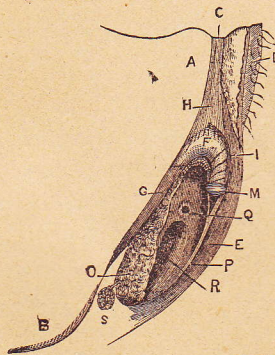
THE VULVA, OR EXTERNAL ORGANS.

THE MONS VENERIS is the rounded prominence on the pubic symphysis, formed by a thick layer of fatty, cellular substance, which raises and cushions up the skin. In early life it is small, but at puberty it suddenly grows into greater prominence. Its surface has many large sebaceous glands, and is covered with crisp hairs, which usually make their appearance at puberty, and are generally regarded by parents as the sign of womanhood, though they cannot be recognized as a proof of that condition. On some females this growth is very limited, while on others its superabundance renders it troublesome. It is never found on women who are rendered incapable of reproduction in consequence of having no ovaries. It was formerly called the *tressoria*, and Chitty informs us that its removal in open court was a punishment inflicted upon females who had been detected for the third time in illicit intercourse.

THE LABIA, OR LIPS, are the two parallel, rounded prominences bounding the *rima*, or *fissure*, of the *vulva*. They are known by the several names of

labia pudendi, labia majora, labia externa, and also, from their slight resemblance to wings, as the *alæ*. They are also distinguished as the right or

FIG. 7



EXTERNAL ORGANS OF GENERATION.—A, right pubis; B, tuberosity of the ischium; C, symphysis of the pubes; D, left half of the mons veneris; E, left labium; F, clitoris; G, crus of the right cavernous body; H, suspensory ligament; I, dorsal vein; M, glans; O, right semi-bulb; P, left nymph, terminating above in the prepuce; Q, urethral orifice, at the base of the vestibule; R, vagina; S, right Cowper's, or suburethral gland.

named the *commissures*. At their lower angle, by their union, they form a small crescentic fold, called the *fourchette*, or *fork*. The opening or fissure between them is frequently designated as

or *lip*. They seem to be the mons veneris continued downward and laterally, until, meeting below, they complete the circle of the vulva. In front they are full and prominent, becoming thinner as they pass to the posterior commissure and unite with the perineum. Sometimes one is larger than the other. Their points of union above and below are

the *fissura vulvæ*, the *rima vulvæ*, or the *fossa magna vulvæ*.

The structure of the labia is similar to that of the mons veneris, being formed of common integument externally and rendered full and round by fatty substance underneath. Their outer surfaces are covered with scattered crisp hairs, a continuation of the tressoria, and have numerous sebaceous glands; their inner surfaces, being in contact with each other and lined by a membrane of great sensibility, require some defence, and are therefore amply supplied with mucous follicles and glands, which serve to keep them smooth and moist, and exude a fluid possessing a peculiar odor. Inattention to cleanliness and other causes produce inflammation of the labia, and, in consequence, being in contact, they have been known to grow together, requiring an operation to separate them. Pregnancy generally makes some changes in their form and color, being of a pink color in virgins, and violet or brown after pregnancy. Childbirths also effect a considerable change upon them. They permit of much distension during the passage of the child, but having no muscular power and depending entirely upon their elasticity, they generally remain larger and more lax after having been much dilated. The crescentic fold, known as the *fourchette*, is lacerated and obliterated in the first childbirth. The relaxation and general disfigurement of the labia is an almost universal result of the habits and practices attending an evil life.

The labia of the female represent the scrotum of the male: in the latter, the two halves of the scrotum, which are divided in the embryo, become united, their point of union being indicated by the *raphe*—in the former, the division remains.

The *NYMPHÆ* are the two folds of mucous membrane immediately within the external labia. They form the inner lips, are of less extent and are less full and rounded than the external labia, and are frequently designated by the several names of *labia minora*, or *lesser lips*, and *labia interna*, or *internal lips*. Their size varies much. They begin immediately under the glans of the clitoris, and seem to be only an extension of its prepuce, formed by a folding of the membrane, and commonly stretch downward and backward to the middle of the orifice of the vagina—in some instances no further than the orifice of the urethra, and sometimes even to the fourchette. They are very vascular and have somewhat of a cellular structure, and are, therefore, capable of a considerable degree of turgidity or expansion under the influence of excitement or irritation. In their natural situation they are completely covered and protected by the external labia, but when naturally large, or in a relaxed condition, they project from under the labia, and are apt to become inflamed and even to ulcerate. In infancy they are larger than the external labia and consequently project from under them, but as the latter develop they are covered and concealed. Their projection is often produced by childbirth, in consequence of its effects upon the labia, rendering them flaccid and causing them to separate.

The nymphæ are extremely sensitive, and, when enlarged or otherwise affected, a peculiar disease is occasioned which sometimes renders their excision necessary. Their enlargement also sometimes interferes with the functions of other organs, and thus gives rise to a similar necessity.

The nymphæ correspond with the integument of the male penis.

In the females of a race in Africa, known as the Hottentots, the nymphæ attain a remarkable growth. This growth commences at their upper part, and sometimes attains a length of three or four inches, forming an apron, covering a portion of the organs. In some of the Oriental nations, where polygamy is the prevailing custom, the excision of the nymphæ, under the impression that desire is thereby diminished, is said by travellers to be a general practice, and is known as *female circumcision*.

The *CLITORIS* is a small glandiform body, situated above the nymphæ, at the upper part of the fissure of the vulva, about half an inch within, and concealed by the junction of the labia. It is frequently referred to under the names of *penis muliebris* and *penis femineus*. It is about two inches in length, and bears a close resemblance to the penis of the male, both in form and structure, having cavernous bodies, called *corpora cavernosa clitoridis*, a spongy body, called *corpus spongiosum clitoridis*, and a glans, or head, called *glans clitoridis*. Like those of the male penis, the cavernous bodies arise from the os pubis by two crura: these unite at the pubic symphysis to form the body of the clitoris, which is suspended from the pubic symphysis by a ligament called the *suspensory ligament*. The spongy body, commencing with the glans and passing along the under sides of the body of the clitoris, terminates in two expanded semi-bulbs which partially encircle the urethral and vaginal orifices. At the lower part of the cavernous bodies is the glans, which is conical in shape and over which the integuments make a fold forming a prepuce. The prepuce is continuous with the nymphæ, so that the latter seem to be only an extension of the former. The clitoris is covered by a very delicate

mucous membrane, which, together with the prepuce, corresponds with the integument of the male penis. It has cells for receiving blood similar to those of the male penis, has corresponding arteries, veins, and nerves, and a similar power of erection—only it has no canal or urethra running through it, and is so small as to be hid by the labia. It is extremely sensitive and is the principal seat of pleasure in the female, and during coition it is distended with blood, and afterwards becomes flaccid and falls.

It is often difficult to determine the sex of the foetus, in consequence of the general resemblance of the clitoris to the male organ. In children it is considerably larger, in proportion, than in full grown women, and it often projects beyond the external labia at birth. Sometimes this is so much the case as to temporarily mislead the judgement as to the sex of the child.

Some singular peculiarities are reported in connection with this organ. In some women it is unduly developed, and in consequence of its remarkable sensibility proves a source of much annoyance. Instances have occurred where it was so enlarged as to enable the female to have intercourse with others, though, of course, without impregnating; and, in Paris, this fact was made a public exhibition of to the faculty. To cases of a similar character we must trace the erroneous impression of the existence of hermaphrodites, or persons of double sex.

The power of the clitoris to influence sexual desire was recognized at an early day; and we are informed by Chitty that its amputation, in open court, was a punishment inflicted upon females who had, for the fourth time, been detected in illicit intercourse.

Behind the semi-bulbs of the spongy body of the clitoris, at their lower part, are two small glands, each having a diameter of about the third of an inch, known as COWPER'S GLANDS, and also as the *suburethral glands*, and as the *glands of Duverney*. Their color is a yellowish-pink, and each has a small duct leading to and opening between the nymphæ and the orifice of the vagina. They are represented as secreting a grey-colored mucous, of a somewhat thick consistence, which is discharged in considerable abundance during coition.

The VESTIBULUM, or *vestibule*, is the triangular space between the nymphæ, and between the clitoris and the upper margin of the vaginal entrance.

The URETHRA of the female is short, almost straight, and wide, and its only use is to serve as a passage for the urine. It is an inch and a half to two inches long, its direction is nearly straight, or but slightly bending under the os pubis, and its diameter is such as will admit a catheter of the size of an ordinary goose quill, though capable of greater distension. Its orifice, called *meatus urinarius*, is near the base of the vestibule, in a direct line under or behind the clitoris and about an inch from it, and its vicinity is plentifully supplied with mucous glands.

The ORIFICIUM VAGINÆ, or orifice of the vagina, is situated just below the vestibule and the urethral orifice. In those cases of childbirths where the deliveries are violent, the orifices of the urethra and vagina are frequently lacerated so as to become one.

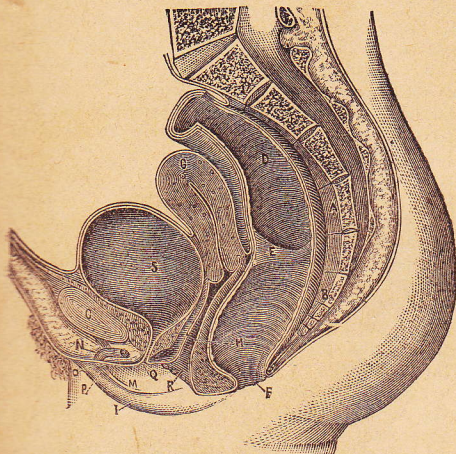
The entrance of the vagina, in virgins, is abridged or partly closed by a fold of the lining membrane, designated as the HYMEN. This has

been called the barrier between the external and internal parts of generation. It has a very different appearance in different women, varying considerably in shape, place, and strength, but is generally crescentic, or resembling a half-moon in form. It commonly surrounds only the lower half of the vaginal orifice. Sometimes it is found surrounding the whole entrance, having only a small hole in the centre or upper part, or being perforated in different places with lesser holes, allowing the escape of the menstrual discharge. Occasionally it is found completely closing the entrance, thus preventing the escape of the menses. Sometimes it possesses considerable strength, so that its rupture is not easily effected, but usually it readily gives way in the first act of coition, its ruins shrinking into two or three irregular folds or wart-like prominences on each side, known as the *myrtiform caruncles*. It has therefore been esteemed as a test of virginity, and has given rise to many idle stories and silly notions. While it is generally found in virgins, its presence is not a conclusive proof of perfect chastity, and its absence is much less so to the contrary. Often, in tender children, there is no such thing to be seen, and then again it has been found in women after impregnation and at the time of delivery. Even where it does exist it is liable to be lost by numerous accidental causes, for which the female is in no way responsible; and where it has been lost, the vaginal entrance may be naturally or artificially so contracted that nothing short of an expert examination can detect its absence.

THE INTERNAL ORGANS.

The internal generative organs of the female consist of the vagina; the uterus, or womb; the

Fig. 8.



SECTION OF FEMALE PELVIS, FROM BEFORE BACKWARD.—A, Sacrum. B, Coccyx. C, Pubic symphysis. D, Rectum. E, One of the valvular folds of the rectum. F, Anus. G, Uterus, or womb. H, Vagina. I, Right labium, or lip. M, Right nymphæ. N, Clitoris, attached by the suspensory ligament to the front of the pubic symphysis. O, Glands of the clitoris. P, Prepuce of the clitoris. Q, Urethra. R, Entrance of the vagina. S, the bladder.

oviducts, or Fallopian tubes; and the ovaries, or egg vessels.

THE VAGINA.

The VAGINA is the membranous canal or tube extending from the vulva to the neck of the womb. Its form or shape is a cylindroid, and it bends gently round the pubis, or follows the axis of the pelvis, forming a slight curve, the hollow portion of which is next to the bladder and the raised portion next to the rectum. In front it is attached by its cellular coat to the urethra and bladder, and behind to the rectum. Above, it is attached to and reflected over the neck of the womb, thus causing the latter to project partly into it, which it does to a greater extent behind than in front. In the labor of childbirth these parts are distended, unfolded, or continued into each other, so that there is then no part which can be considered as the precise termination of the vagina or beginning of the womb.

The vagina has three coats. The outer coat is formed of a condensation of the surrounding cellular membrane, by which it is connected with the contiguous parts. A portion of the upper part of the vagina is also covered by the peritoneum; but for the greater space its outer cellular coat connects it with the urethra on the fore part, and with the rectum behind. The middle coat is composed of muscular fibers which are not prominently defined, yet serve to impart to it a certain degree of contractile power. The inner coat consist of a mucuous membrane having a villous, or velvety, surface. It is of larger extent, or longer than the other coats, and is therefore tucked up into numerous *rugæ*, or wrinkles, running across the vagina, which are most remarkable on the fore and back parts, and are marked at different places by little,

rigid, wart-like elevations, the number of which is considerably augmented near the vaginal entrance. These *rugæ* are to a large extent, and sometimes entirely, removed by repeated connections or child-births. To protect the inner surface of the mucous membrane, there are numerous glands or excretory ducts irregularly scattered over it, the secretions of which serve to keep it in a moist and healthy state. The firmness of the structure of the vagina supports the womb; its dilation and relaxation occasions the falling down of the womb—a disease almost peculiar to those who have borne many children, to the old, the weak, and the relaxed, and to those who are subject to the *flour albus*: every flux from the womb, or discharge from the vagina, having a remarkable effect in relaxing the parts.

The size of the vagina is subject to considerable variation, and depends much upon circumstances. In the adult virgin, and in a natural condition of the parts, the orifices of the womb and vagina are about three or four inches apart, and sometimes not more than two; in case of any relaxation they are brought almost in contact. Its length may, therefore, be stated at three or four inches. Naturally its sides, by their own elasticity, by the fullness of the veins, and by the contraction of the surrounding fibers, are in contact. Its breadth is about one inch and a quarter, being broadest in the middle and narrowing toward the extremities. Its narrowest point is at its lower extremity. Near its entrance are the myrtiform caruncles, regarded as the remains of the hymen. It is capable of being extended to a remarkable degree, and is much enlarged by frequent intercourse or pregnancies. It is thus made to greatly exceed the foregoing dimensions, attaining a length of from five

to six, and, in remarkable cases, even eight inches, and a diameter of from two to two and a half inches.

The contractile power of the vagina is apparently dependent upon its vascularity. Under conditions of excitement, or during coition, the vessels of its coats become inflated by an afflux of blood to it, and it is in consequence contracted and rendered shorter. Its mouth, or orifice, is surrounded by a muscle having considerable strength, designated as the *sphincter vaginae*, which arises from the sphincter of the anus and from the posterior side of the vagina, near the perineum, and then runs up the side of the vagina near its external orifice, opposite to the nymphæ, and is finally inserted in the crus and body, or union of the crura clitoridis. Its use is to contract the mouth of the vagina, and it sometimes acts with such singular power as to render an entrance of the vagina more or less, and in some instances exceedingly, difficult; and unless relaxed through excessive indulgence or other causes, each act of coition is attended by similiar difficulties.

In some peculiar developments of the vagina it has been found so short as to give rise to much annoyance; in other cases, its exceeding smallness occasioned difficulties of an equally annoying character; while in others, again, its undue enlargement deprived it of the power to support the womb, which was, in consequence, frequently falling into it. Instances are also reported where a double vagina was presented, each of its parts being more or less fully developed and capable of performing the functions of a perfect organ. Such cases, however, are rarely met with.

THE UTERUS, OR WOMB.

The UTERUS, MATRIX, or WOMB, is a spongy receptacle resembling a compressed pear, situated in the cavity of the pelvis, above the vagina, and between the urinary bladder and the rectum, being in contact above with the small intestine, in front with the bladder, behind with the rectum, and attached to the vagina below. It is divided into three parts: the *fundus*, or *base*; the *corpus*, or *body*; and the *cervix*, or *neck*. The fundus is the upper part, above the going off of the oviducts with which it is continuous. The body is the largest part, being the part between the fundus and the neck, and is enclosed in a duplicature of the peritoneum. The neck is the narrow, cylindrical, lower part: at its lower end is the *os tinca*, the *os uteri*, or the *mouth*, of the uterus—a transverse orifice opening into the vagina, and bounded by two bulging lips, one of which is larger than the other. Over this part the inner membrane of the vagina is reflected, causing the neck of the womb to project into the vagina. In the virgin female the lips are full, smooth, and round, but in giving birth to children they are liable to be injured, and will afterwards exhibit scars. The neck and mouth of the womb are credited with possessing considerable sensibility, and of contributing largely to the sensations attending coition.

In the adult virgin the womb is about two and a half or three inches long, of which the body comprises about an inch and a half; about two inches broad at the fundus and one at the neck; and about one inch thick: but the disparity of size and dimensions in different women, even without reference to the states of virginity, marriage, or pregnancy, is

so great as to preclude any accurate mensuration. During childhood it is quite small, but at puberty it grows and develops with great rapidity.

The cavity of the womb corresponds with the external form, and extends from the os tincæ, or mouth, to the fundus. It is small at the mouth, expands a little in the neck, becomes most contracted at the junction of the neck with the body, and then expands into triangular form, becoming considerably enlarged at the fundus and forming the two angles with which the oviducts, or Fallopian tubes, are connected by two small orifices. By some physiologists the triangular portion, extending from the neck to the fundus, is alone regarded as the cavity proper, and the remaining part, extending through the neck, is considered simply as a canal, and called the *canal of the cervix*. The cavity is naturally very small during its entire length, its opposite sides being almost in contact, but after pregnancy it remains somewhat enlarged.

The internal surface of the womb is somewhat peculiar. The triangular portion is lined with a thin, smooth, delicate, and very vascular membrane, which becomes thicker, harder, and less vascular in the cavity of the neck, and is folded into wrinkles. Between these wrinkles are small orifices which discharge a mucilaginous fluid, one important purpose of which is to close and glue up the mouth of the womb during pregnancy, so that there may no longer be any communication with the vagina.

The substance of the womb is composed of arteries, veins, lymphatics, nerves, and muscular fibers, variously interwoven and connected together by cellular membrane, rendering the whole organ very firm, solid, and strong, and capable of exerting an astounding degree of force.

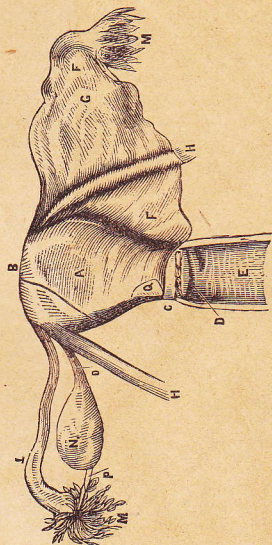
The changes which take place in the womb during pregnancy are very remarkable. While its natural dimensions may be regarded as very small, after impregnation has taken place the whole organ begins to increase in size and gradually rises into the cavity of the abdomen, enlarging with the growth of the foetus, until it attains immense proportions compared with its original dimensions—in some cases exceeding a foot in diameter. The rapidity with which its size diminishes is equally remarkable; for in a few days after delivery it assumes almost its original dimensions, although never regaining exactly its former shape nor its virgin smallness.

The prominent ligaments of the womb are the *broad ligaments*, formed by the duplicature of the peritoneum which invests the oviducts and the body and upper portion of the neck of the womb; and the *round ligaments*, which arise from the sides of the womb, a little below and before the going off of the oviducts, pass through the abdominal ring, and become attached to the cellular membrane of the thigh. These, together with several smaller ligaments, the attachment of the neck to the vagina, and the reflections of the peritoneum between the womb, the bladder, and the rectum, serve to hold it firmly and securely in its place.

The womb is copiously supplied with blood by four large arteries—a provision of nature guarding against accidents, and furnishing a supply of nourishment for its own growth and for the growth of the foetus. It also has four large veins which return the blood.

Its use is to receive the ova, or eggs, from the ovaries, as they leave the oviducts, and if any be impregnated to retain it until it is developed into

Fig. 9.



THE WOMB AND ITS APPENDAGES.—A, the womb and part of its peritoneal covering; B, its fundus; C, its neck, the fore part of the attachment to the vagina being removed; D, mouth of the womb; E, interior of vagina; F, broad ligament, removed on the opposite side; G, position of the ovary behind the broad ligament; H, H, round ligaments; I, I, oviducts, or Fallopian tubes; M, M, their fimbriated extremities; N, ovary; O, ovarian ligament; P, process connecting the fimbriated extremity with the ovary; Q, cut border of the broad ligament.

the fetus and finally prepared to be brought forth in the form of a new human being.

Some singular peculiarities have been met with in reference to this organ. Cases are on record in which the smallness of the womb rendered the female barren, and it has even been found absent altogether. It has also been found double, each part having a separate connection with the ovary at its side, and a distinct opening into the vagina. In these cases it was quite possible for impregnation to occur at different times more or less closely connected—that is, an ovum might be impregnated in one of the double parts and be partially grown, and subsequently another one might be impregnated in the other part. This is called superfetation.

THE OVIDUCTS, OR FALLOPIAN TUBES.

The OVIDUCTS, or FALLOPIAN TUBES, also frequently called the UTERINE TUBES, are two tubular processes attached to the upper portion of the womb. They are about three inches long, and are connected by one end with the womb at the lateral angles formed betwixt its fundus and its body, being included in the two laps of the peritoneum forming the broad ligaments of the womb. From the womb they pass transversely, their outer extremities terminating above, and exteriorly to, the ovaries. These have unequal fringed terminations, known as the *fimbriae*, and are therefore called the *fimbriated extremities*. The fimbriated extremities are free from the enveloping folds of the peritoneum, or broad ligaments, and hang loose near the ovaries, with which they are also connected by the largest of the different processes of which they are composed.

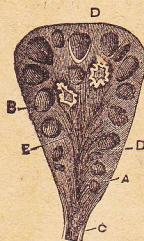
In shape each oviduct somewhat resembles a

trumpet. The large and free end near the ovaries, surrounded by the fimbriae, opens into the abdominal cavity by an expanded orifice about one-third of an inch in diameter. This opening rapidly narrows, and the canal extending through the oviduct to the womb becomes very small. At the point where it communicates with the triangular cavity of the womb, it is exceedingly minute, not allowing of the passage of any body much thicker than a hair. Through this canal the communication between the womb and ovary is preserved.

Beneath the peritoneal covering, which is regarded as their outer coat, the oviducts have two additional coats, one of which considerably resembles the substance of the womb, while the other is a mucous membrane marked by some peculiarities. It forms the innermost lining of each oviduct, is soft and of a pinkish white color, and its surface is covered with numerous fibers, resembling hairs or threads, called *cilia*. These cilia point towards the womb, and are subject to a movement, more or less continuous, which draws them in and then forces them out again. By a process of expansion and contraction, a peculiar movement, partaking of a wave-like character, tending from the free end towards the womb, is also given to the oviduct. The canal of the oviduct is thus perfectly and completely guarded, so that no substance in the womb can pass through it to the ovary nor into the abdominal cavity: and at the same time, the oviduct is thus also rendered peculiarly and admirably efficient for the purpose for which nature designed it, which is to convey the ova, or eggs, after they have been set free from the ovary and ovisacs, into the cavity of the womb.

THE OVARIES, OR EGG VESSELS.

FIG. 10.



TRANSVERSE SECTION THROUGH THE OVARY.—(From a case in the fifth month of pregnancy). *A B*, ovisacs; *C*, ovarian ligament; *D D*, tunica albuginea; *E*, stroma. In the interior, two old corpora lutea are visible.

THE OVARIA, OR OVARIES, frequently designated as the *testes femineus*, or *female testes*, are two oval shaped bodies, of a pale red color, situated about one inch from the womb, one on each side. While they have an oval figure they are also somewhat compressed or flattened, so that they to some extent resemble a large almond in appearance. They are suspended from their upper border in the broad ligaments of the womb, behind, and at their narrow end is the *ovarian ligament*, which extends to and connects them with the sides of the womb immediately below and behind the point of the going off of the oviducts. They are about

one inch in length, and rather more than half an inch in breadth and thickness, varying both in size and appearance in different females and at different ages. In childhood they are quite small, but as puberty is approached they increase in size, being largest between puberty and adult age in the virgin female, and having then a pearly-white, smooth, and plump appearance.

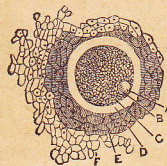
The outer coat of each ovary is given by the peritoneum, proceeding from the broad ligaments of the womb, beneath which the ovary is covered by a fibrous membrane designated as its *fibrous*

tunic, or as the *tunica albuginea*, through which, at the upper border of the ovary, pass different vessels and nerves, called the *ovarian blood vessels* and *nerves*. The internal structure of the ovary is well provided with blood vessels, and consists of a redish, cellular, and fibrous substance designated as *parenchyma* or *stroma*, and of numerous globular vesicles which are known as *ovisacs*, and also as the *Graafian vesicles*.

In the ovaries the ovisacs are of all sizes, many being imperceptible to the naked eye, but frequently ten, twenty, or more, are found considerably developed, some approximating a quarter of an inch in diameter. Generally a single one is seen in a state of maturity considerably in advance of the others. Each ovisac has a membranous envelop, which is lined on the inner surface by a layer of grain-like cells, called the *granular layer*, or the *membrana granulosa*. On the side of the ovisac next to the surface of the ovary is an accumulation of these cells which is known as the *germinal eminence*, and also as the *germinal disk*, and as the *discus proligerus*. The contents of the ovisac consist of a thin, watery fluid in which float numerous granules, and in which is also found the *ovum*, or *egg*. This egg originally occupies the center of the ovisac, but as it matures or ripens it becomes enveloped in the germinal eminence. As each ovisac develops to maturity it passes to the surface of the ovary, becoming so much enlarged that its diameter measures rather more than the third of an inch; and at this point of its connection with the ovarian surface the coats of the ovary gradually thin away and the ovisac projects through them. When fully matured or ripened the ovisac bursts—a process to which the name of

ovulation, or *laying of the egg*, has been given—and the ovum is set free, when it is received by the fimbriated extremity, and conveyed through the canal, of the oviduct into the womb.

FIG. 11.



OVUM.—A, germinal spot; B, germinal vesicle; C, yolk; D, zona pellucida; E, discus proligerus; F, adherent granules, or cells.

When the *ovum*, *ovule*, or *egg*, is first set free from the ovisac, it generally retains the accumulated cells known as the germinal eminence or discus proligerus, and some of the granules mentioned as being contained in the ovisac also usually adhere to it; but subsequently these all disappear, and the ovum then presents the appearance of a small and nearly spherical body. It is so extremely small that it is barely perceptible to the naked eye, and to indicate its size it has been compared to the point of a pin. Its diameter is given as about the one one-hundred-and-twentieth of an inch, though the ovary somewhat in their diameters. It has a transparent membrane about one-twenty-five hundredths of an inch in thickness, called the *vitelline membrane*, which appears like a broad transparent zone when microscopically examined, and is therefore also called *zona pellucida*. The contents of the ovum, enclosed within this zone, are known as the *yolk*, or *yolk*, being of a pale-yellowish color and consisting of a viscid fluid intermingled with numerous granules of different sizes. This yolk is principally composed of albumen and oil globules, and within it is found a well-defined and distinct vesicle or cell, of a pale-greenish color, called the

germinal vesicle, or the *germ cell*. The germinal vesicle consists of a delicate membrane which is spherical in form, and contains within it a number of granules which are suspended in a liquid substance, and also a little nucleus of yellowish-dark colored granules about the one-three-thousandth of an inch in diameter, called the *germinal spot*.

From puberty to the period designated as the *turn of life*, which usually takes place between the ages of forty and forty-five, the ova, or eggs, are ripening in the ovisacs and passing to the outer surfaces of the ovaries to be set free and conveyed into the womb. They ripen and are set free in succession, generally one at a time, and this event usually takes place once a month, or monthly, in regular order, being suspended only during the periods of pregnancy, and also generally during the time the mother is nursing the child. Whenever an ovum has thus passed from the ovary, a small fissure or rent is observed at the place through which it escaped from the ovisac. The membranous envelope of the ovisac, after the ovum has escaped, still adheres to the surface of the ovary, and, becoming filled with blood which afterwards coagulates into a clot, it contracts upon this clot, which gradually changes in color, and together they form a yellowish-brown body, somewhat spherical in form, called the *corpus luteum*. The *corpora lutea* are designated as the true and false. The true corpus luteum, in consequence of the ovum having been impregnated and the condition of pregnancy produced, attains a higher degree of development, and continues longer, than the false corpus luteum which is not attended by impregnation of the ovum and pregnancy. This is supposed to be due to the fact that in the former case the afflux of blood to

the parts is more continued than in the latter. The corpora lutea, whether true or false, gradually disappear, and eventually remain upon the surfaces of the ovaries simply as scars to mark the places through which the ova had escaped. Many of these scars are no doubt finally wholly absorbed, but there is always a certain number of them to be seen, and sometimes the surfaces of the ovaries are found almost completely covered over with them. As the female advances in life, the scars then left by the escape of the ova become more marked, and finally, as the turn of life is passed, the ovaries cease to perform their functions, become shrivelled up, or shrink to less than half their original size, and sometimes disappear almost entirely.

The ovisacs of the female represent the testes of the male: the former produces the female principle, and the latter the male principle, and the union of the two eventuates in the production of the human being.

CHAPTER IV.

PUBERTY.

THE term PUBERTY is used to designate the age at which persons are capable of procreating or perpetuating the race—the male of begetting and the female of bearing children. It takes place at about the same age in both sexes, but varies considerably in different persons, and is also influenced by climate. In temperate climates, like ours, it generally commences from the ages of fourteen to

sixteen; where the climate is almost continually warm or hot, it usually occurs between the ages of nine and twelve; and where almost continual cold prevails, it is mostly postponed to the ages of eighteen and twenty. The influences attributed to climate are, however, denied by some observers, who allege that the early development in warm latitudes is more apparent than real, and not the result of climate; that the early association of the sexes follows from lack of any restraint, from depravity of morals, and, generally, from the peculiar and loose manners and customs of the people; and that if similar laws, manners, and customs prevailed in more temperate regions, they would produce the like effects. Temperament or constitutional peculiarities of individuals, and it is said even of races, seem to produce effects similar to those ascribed to climate: it is therefore observed that among individuals, irrespective of the climate in which they live, the female of dark hair and dark eyes reaches puberty in advance of her sister having light hair and blue eyes, the brunette in advance of the blonde, and the slender, lean, and nervous in advance of the fat, sluggish, and phlegmatic; while of the races, the negro, the creole, and the Jewish female are reputed to arrive at the same point in advance of others, but the accuracy of this statement is by no means generally admitted. Individual habits, modes of life, and diet, affecting the mind or body, also have a tendency to hasten the time of puberty: it has therefore been observed that exciting, sensational, or obscene literature, and all associations, practices, or conversations which tend to awaken the dormant sensibilities or amorous propensities, first acting upon the mind and then re-acting upon the organs of

generation, have a powerful influence in developing or hastening puberty; while idleness, indolence, stimulating drinks, highly-seasoned and animal food, luxurious living, sleeping upon beds of down, and sitting in hot rooms, have a similar effect to an almost equal degree. It is therefore that a more rapid development of puberty is found among the young living in towns and cities than among those living in the country—the latter being more free from the daily excitements that attend the former, less given to indolence and luxury, seeing and hearing less of immoralities around them, encountering less of exciting associations, and meeting with fewer of those experiences which are calculated to arouse the latent sensibilities and passions.

Where puberty develops itself in the order of nature it is marked by many changes in the human system, and being characterized by many singular and remarkable physical and mental manifestations, in both the male and the female, it has attracted the attention alike of the ignorant and the learned, and given rise to many fine theories and nice speculations. While these are in the main vague, unsatisfactory, and full of errors, the effects attending puberty are as definite as they are remarkable.

In the male the physical effects are observed in a general development of the generative organs, resulting in a growth and completed function of parts; the hairs on the pubes make their appearance; the testes begins to secrete the semen, and the seminal animalcules are produced and developed, the beard begin to grow; the cerebellum (one of the divisions of the brain situated in the occipital or hinder portion of the head and the nape or back part of the neck become enlarged

and expand, sometimes to such a degree as to give an entire change to the appearance of the person: the voice becomes changed, and the whole being seems to be suddenly developed into manhood.

In the female a change even more marked takes place. "In very young children the external parts of generation bear a very large proportion to the body, greater than at any subsequent period prior to puberty. From the age of two years to twelve or thirteen, there is little increase. At puberty they are suddenly and completely evolved. Preceding menstruation and the development of the uterine system, the whole parts, internal and external, partake of a sudden impulse: they become turgid and vascular; and the fat is deposited in the surrounding cellular membrane;" the hairs make their appearance and begin to cover the pudenda; the womb increases in size; the ovaries become enlarged and begin to exercise their functions; an ovum is set free and menstruation commences; the breasts rapidly increase in size, become matured, and the nipple protrudes; the neck and throat enlarge; the chest expands; the eyes acquire new intelligence and brilliancy; the complexion is improved and the countenance becomes more expressive and animated; and the whole body assumes the fullness and expansion of feminine beauty, attesting the capacity of the woman to become a mother.

The changes marking or affecting the moral constitution, resulting from these physical changes and developments, manifest themselves in actions and become more generally apparent. New feelings and new inclinations are created, producing an entire change of previous habits. The mind is no longer exclusively absorbed in childish pursuits

and amusements, and different and more agreeable themes become the subjects of conversation, and a higher degree of intelligence characterizes it. The sexes, previously so freely intermingling in innocence and simplicity, in consequence of the new thoughts, emotions, and desires experienced, now assume a quite different relation towards each other. To the male, the female becomes clothed with new charms, he sees her in a new light, and his deportment towards her acquires a character quite different from that which had previously marked his association with her. The female becomes shy and coy; loses her desire for the things that had previously interested her; acquires new graces and intelligence; her impulses receive a new and different direction, and all her actions towards, and associations with, the male indicate that some strange and mysterious change has taken place. To both a new life is opened, and each enters upon it involved in mystery yet animated by youthful hopes and courage.

CHAPTER V.

THE SEMEN.

THE peculiar liquid substance secreted by the testes of the male is known as the SEMEN, or SEED. In the testes its consistence is thin and diluted, and in color it is somewhat yellow; in the seminal vesicles it is viscid, dense, rather pellucid, and of a deeper hue.

Freshly ejected semen is, apparently, a mixture of two different substances, the one being fluid and

tail, y, the other thick and mucilaginous and containing numerous white, shining filaments. It has an acrid, irritating taste, and its odor is specific, heavy, affecting the nostrils, yet not disagreeable. A similar odor is observed in the roots of the orchis, familiar species of which are the lady's slipper, the putty root, and the salep. A like odor is also emitted by the antheræ of many plants. This odor is so penetrating that during certain seasons it renders the flesh of some wild animals foetid and useless, and but for the practice of castration that of domestic animals would be rendered equally unfit for use during those seasons.

Analyses of semen show that it is composed of water, animal mucilage, phosphate of lime and soda. It is insoluble in water when first ejected, the greater portion of it sinking to the bottom, and the remaining portion spreading itself over the surface, upon which it swims in connected threads, very much resembling a cobweb. When exposed to the air it loses its pellucidity and becomes thick, but after a few hours it becomes thinner than it was when first emitted, when it will readily dissolve in water. It is speedily dissolved by the acids.

If semen be exposed to the air, at a temperature of about sixty degrees, it gradually becomes covered with a transparent skin or film, and after three or four days deposits small transparent crystals. If, after the appearance of these crystals, the exposure to the atmosphere be continued, the film on its surface gradually thickens, and a number of white round bodies appear interspersed through it. These bodies, and the crystals previously deposited, are the same substance, and have all the properties of phosphate of lime.

If semen be dried and exposed to heat it melts,

becomes brown, and exhales a yellow fume having the odor of burnt horn. When the heat is increased, its color becomes black, and the odor of ammonia is emitted. After this odor of ammonia subsides, an alkaline solution may be obtained yielding crystals of carbonate of soda.

From these properties of semen, M. VAUQUELIN gives the following analysis:

1. Water,.....	90 parts.
2. Animal mucilage,.....	6 "
3. Phosphate of lime,.....	3 "
4. Soda,.....	1 "
	100 "

This analysis is based upon semen as it leaves the body, containing the secretions of all the organs through which it has to pass prior to being ejected.

The most remarkable peculiarity of the semen, however, has been developed by the microscope. The perfection of this instrument has revealed the fact that the semen is filled with innumerable living and moving animalcules. These are known by the different names of *spermatozoids*, *spermatozoa*, and *seminæ animalculæ*, and constitute the germ of the future human being: it is imperative that they obtain access to the *ovum*, or *egg*, of the female, and if they fail to do so, no impregnation nor conception can follow connection. In shape and form these animalcules present the appearance of an ovoidal head, and a long filamentary appendage or tail which is capable of very rapid vibration. In size they are so infinitesimal that the microscope will reveal thousands in a particle of semen not perceptible to the naked eye. Some physiologists have even estimated that a particle no larger than a grain of mustard seed will contain fifty thousand

of them. They are endowed with inherent power of movement, and manifest a great degree of liveliness and activity. Their motions are quick and



SEMINAL ANIMALCULES.—1, magnified 350 diameters; 2, magnified 800 diameters; *a a*, viewed on the narrow side; *b b*, viewed on the broad side.

generally regular, with a strong tendency, to move in a direct forward direction, which is manifested by a disposition to adhere to any obstacle that intercepts their course rather than to avoid or pass around it. They possess considerable tenacity of life, and have been known to survive for twenty-six hours after their introduction into the female organs. In warm water they will survive for several hours, thus affording opportunities for observing their movements. It has been stated that they are sexual, some being male and others female, but this is difficult of determination. If true, it will account for the difference in sex of individuals.

The seminal animalcules themselves originate from a species of ovum, or egg, secreted in the testes and resembling a minute globule of mucous. In the semen, as it is found in the testes, they do not exist in their fully developed state; in that taken from the seminal vesicles and prostate gland they are found fully developed, indicating their growth and development as the semen is conveyed through the different channels and organs.

They are not developed until the individual has attained the age of puberty, and as old age advances they are formed to a less extent, and occasionally not at all. In extreme old age they are seldom ever found to exist. Disease may retard or prevent their formation and development, and certain diseases always have this effect. Certain drugs, such as opium, iodine, strychnine, &c., have the effect of destroying them, which renders it a serious question how far such drugs should be employed. Electricity also kills them, while galvanism seems to have no such effect upon them. Alcohol either kills them or throws them into spasms. Tobacco, also, has an injurious effect upon them. How far the excessive use of these articles, so universally consumed by our people, has a tendency to debilitate the race and retard its advancement, will be apparent to every one who will for a moment reflect that these seminal animalcules are really the germs which are developed into the fetus in the womb of the female, and ultimately into the human being.

CHAPTER VI.

THE MENSES, OR CATAMENIA.

From the time of puberty to the turn of life, there is a regularly recurring discharge from the womb of every healthy woman, known as the MENSES, COURSES, OR CATAMENIA. At whatever time of life this discharge makes its appearance for the first time, a woman is said to have arrived at puberty. It appears first at different ages in different women, and the time of its appearance is also much

hastened or delayed by various circumstances. Observations made in two hundred and twenty-six cases, and published in the *Medical and Surgical Journal*, England, resulted as follows :

AGE AT FIRST MENSTRUATION.

6 cases,	11th year.	54 cases,	16th year.
12 "	12th "	50 "	17th "
31 "	13th "	19 "	18th "
60 "	14th "	18 "	19th "
72 "	15th "	4 "	20th "

There are, however, many cases reported in which it appeared much earlier—in some as early as the ninth year, while in others it appeared as early as the third or fourth year, and yet these children grow up into healthy women. Several cases are given in which it appeared in the infant from the time of birth.

The first appearance of the menstrual discharge may be hastened by all the influences described as hastening puberty. It has also been observed that those in whom it commences early arrive at the turn of life at a much earlier age than those in whom it commences later. "Early ripe, early old," has therefore grown into a homely proverb expressive of this fact. From this it will be seen that its early appearance is much to be deplored, and that all the influences calculated to hasten it should be avoided. The young girl should be permitted to grow naturally into the young woman, so that when the time of womanhood arrived, the entire body would be characterized by a corresponding development. When the time approaches for the first appearance of the menstrual discharge, due attention should be given, and proper information imparted, to the inexperienced person, so that any difficulty may be promptly corrected, and the in-

jurious excitements and alarm often attending this event avoided.

When the menstrual discharge is once fully established, it recurs with remarkable regularity once every twenty-seven, twenty-eight, or thirty days, being interrupted or suspended only, when the person is in health, during the period of pregnancy, and generally during the time the mother is nursing the child. It is commonly said to recur monthly, and has therefore been designated as *menstruation*, a word derived from *mensis*, a month. Exceptional cases are sometimes met with in which it recurs every three weeks, while in others the periods are five and even six weeks apart. Cases in which its recurrence varies for several days without producing inconvenience are not uncommon, but generally it recurs with such a degree of regularity that the time can be calculated with remarkable accuracy, in some women even to the hour. This regularity has considerable influence on female health, and when it is interrupted in consequence of disease, should receive immediate attention and be speedily corrected; but occasional irregularities are not always the result of disease, and frequently produce unnecessary alarm. In some women this irregularity is constitutional, or natural, and when this is the case the efforts made to correct the supposed evil are always calculated to prove injurious and never to do any good. It sometimes happens that the discharge is very slight, colorless, attended by little or no excitement, and not preceded nor accompanied by any symptoms attracting the attention of the individual, and therefore passes off without being noticed. Discharges from the vagina may also occur from weakness or other causes, and where this does

chance to take place it is often mistaken for the menstrual discharge. These peculiarities are apt to lead to deception in estimating the time of the recurrence of the menses, and it therefore happens that some women are frequently mistaken in their estimates. These errors can only be avoided by attending to every discharge that may occur, by examining its character, and especially by observing its odor, which is more or less perceptible in most cases, and from its peculiar nature will also guard against error.

The length of time during which the discharge continues is subject to some variation. In some women it is finished in a few hours, and in others it continues from one to ten days; but the usual time of its duration may be stated at from three to four days: it rarely lasts as long as five or six days. Its discontinuance is gradual, not sudden; and during the few days that it lasts, proper attention should be paid to the system—many things having then an evil effect which at other times would be harmless.

The quantity of the menstrual fluid discharged at each period is also subject to considerable variation, and depends very much upon constitutional conditions and manner of living. Its average is regarded as being about five or six ounces—rarely exceeding eight. Cases, however, have been known in which the quantity discharged at each period exceeded thirty-two ounces without producing inconvenient results. Climate seems to exercise a peculiar influence in this regard, and the quantity of fluid discharged periodically is considerably greater in the more temperate than the equatorial and northern regions.

The menstrual fluid consists of blood, with a

slight intermixture of mucous. At the commencement of the discharge, the quantity is usually small and of a pale red color, but after some hours it increases and partakes more of the color and character of blood. In some women it is inodorous, while in others its odor is always rank; but this latter property is supposed to be due to partial decomposition having taken place in consequence of the slowness of its evacuation.

For a long period of time the cause or causes which produced this discharge was regarded as mysterious. While the ignorant or pretentious summarily disposed of the matter by ascribing it to the influence of the moon, it formed the subject of innumerable speculations, and even of disputes, among professional and scientific men; and, like similar speculations in regard to the action of the ovaries, these conjectures frequently afforded the most apt illustrations of how near simple theory may come to the actual truth for years in succession without positively arriving at it. The action of the ovaries and flow of the menses are so intimately connected that a proper comprehension of the functions of the former necessarily revealed the cause of the latter. The existence and action of the ovaries are necessary to effect menstruation. Where they do not exist, or where they exist in a dormant or inactive state, menstruation cannot occur. As the ovum matures or ripens in the ovum, and as the latter is brought to the surface of the ovary, the spermatic veins and the whole uterine system begin to manifest increased action. The blood vessels of the womb and those of the ovary become filled with blood, the latter becomes enlarged and much excited in its action, and this condition attains its highest point as the ovum is fully

matured and set free from the ovary and the *ovisac*. The rupturing or bursting of the *ovisac* is attended by a discharge of blood from the engorged vessels or veins, producing the flow known as the menstrual discharge. Thus the rupturing of the *ovisac* and setting free of the ovum or egg become the cause of menstruation.

The recurrence of each monthly discharge is attended by indisposition indicating a constitutional affection, or by certain premonitory symptoms, more or less in number and severity, according to the condition of the individual or her state of health. These symptoms are often particularly marked or severe (although cases are sometimes seen in which they do not occur at all) when menstruation takes place for the first time, and usually they attend each subsequent periodical recurrence to a greater or less degree. They are defined as consisting of a condition of excitement; sickness, or a deviation from the ordinary state of health; fullness of the circulation; fullness or numbness in the lower part of the abdomen, loins, thighs, and fundament; relaxation about the uterine system; lassitude; anxiety; indefinite pains, or pains in the lower part of the abdomen, or small of the back: the pulse also increases; the appetite becomes delicate; the limbs tremble and feel weak; the mammae swell and become hardened; the face becomes pale; the eyelids, particularly the lower one, assume a brownish tinge; and to this formidable list may be added slight fever, headache, and general restlessness. With the appearance of the discharge the premonitory symptoms, whatever they may have been, usually abate or disappear.

The effects attending the menstrual discharge apparently depend upon the manner of life and the

consequent condition of the individual. Many women are completely prostrated, and suffer severely, even more than in the labor of childbirth, from one or more, or from a complication of some of the symptoms already enumerated. This is especially the case with those who have been delicately reared and whose constitutions are in consequence imperfectly developed or impaired; while those who are in perfect health, and who have not suffered from any of the debilitating habits and practices which a general ignorance classes as refinements, are usually free from all these effects. So powerful is the influence exerted, over both body and mind, by the discharge, by the causes which occasion it, and by the conditions which precede or attend it, that it becomes the principal constitutional characteristic distinguishing the female. All the energies and capacities of her system are often absorbed in this single function of her organism, which, during the years that the recurrence of the discharge continues, seems to constitute the main object of her existence. Requiring the principal portion of her strength and her nervous power, and being often accompanied by severe pains, the effects become peculiarly manifest upon the mind: the individual often becomes depressed in spirits, despondent, and melancholy; sensitive, excitable, feverish, and irritable; sometimes exceedingly gay and frantically hilarious, or even hysterical; and sometimes changing from one mood to another, with an irregularity so provoking that even the knowledge of her inability to avoid it is not always sufficient to enable her friends to maintain a patient temper. It is a melancholy truth that the prevalent ignorance of the nature of the effects often attending this periodical condition of the female, results in the withholding from her

the attention and sympathy which are then peculiarly due and acceptable to her, and which would immeasurably contribute to the relief of her mental and physical suffering. These singular effects have led to many evil consequences in times past, and latterly an impression has even been created that they are equal to, or temporarily occasion, a condition of insanity; and in a case of murder, which was committed in one of our larger cities and resulted in extended notoriety, by a woman while in that condition, this view of her mental state secured her escape. With a knave for a lawyer, an ignoramus for a judge, and twelve idiots for jurors, juxtapositions not unfrequently met with in the present state of our society, the many peculiarities attending menstruation can very readily be made to appear as necessarily resulting in insanity.

The lack of information in past ages regarding the phenomenon of menstruation was accompanied by the usual results attending ignorance, and gave rise to many foolish and superstitious notions which sometimes culminated in acts the inhumanity of which was only exceeded by their absurdity. Strange and peculiar properties were ascribed to the menstrual fluid, equal in malignity to the most virulent poison or malaria. It was credited with the baneful influence of blighting grain, preventing seeds from growing, causing fruits to fall from the trees, destroying bees and insects, producing madness in dogs, and numerous other more dangerous and contaminating powers, which rendered it necessary to place the poor woman, during the time the discharge continued, and while she most needed human sympathy and assistance, beyond the reach of doing harm or spreading contagion! The old Jewish laws, and the various references made

in the Bible to the menstrual fluid, fully show the dreadful apprehensions it seemed to inspire and the opinions entertained of its baneful effects. These opinions were adopted by the physicians of other nations and countries, and in many cases led to the severest regulations prescribing the conduct of women during that period—for the time driving them beyond the pale of society, and, as seen in the decree of the Council of Nice, even closing the doors of the Christian Church against them! These opinions and regulations are now, however, principally confined to barbarous countries; yet similar notions are still entertained to some extent among the ignorant of every nation.

From the age that the menstrual discharge commences it continues for about thirty years of woman's life, and when it permanently ceases to occur the change is designated as *the turn of life*. The age at which this change takes place varies some years in different women, but it usually occurs at the age of forty or forty-five years. Observations made in seventy-seven cases gave the following result as to the ages at which the change occurred:

TURN OF LIFE.					
Cases.		Years.	Cases.		Years.
1	at	35	26	at	50
4	at	40	2	at	51
1	at	42	7	at	52
1	at	45	2	at	53
3	at	44	2	at	54
4	at	45	1	at	57
3	at	47	2	at	60
30	at	48	1	at	70
7	at	49			

This change is often attended by serious difficulties, so that the age at which it occurs is always

accompanied by indefinite apprehensions on the part of the female and her friends. During the years that the discharge continues it is supposed to be one of the means by which impurities generated in the body are conveyed out of it, and therefore its stoppage, by closing up this channel, is thus supposed to produce these annoying and often dangerous difficulties. Acting upon this supposition, at this period special attention is directed to the pores of the skin and to the bowels, so that the secretions which heretofore found escape through or with the menstrual discharge may the more readily be excreted through the other channels provided by nature. When once the change is fully effected, the mental faculties often acquire new strength, the woman becomes more domesticated, and generally lives longer than man.

CHAPTER VII.

LOVE—ITS ORIGIN AND PURPOSES.

PHYSIOLOGISTS, and mental and moral philosophers, in their efforts to account for the physical, mental, or moral causes which give activity to, or originate, those peculiar feelings and emotions, that physical and mental state or condition, which we call *love*, have given expression to so many differing views and opinions that they have left the subject rather befogged than elucidated. The effects of love, however, are more manifest, and hence there is more uniformity of opinion in regard to them. The majority of writers freely concede that, in civilized and enlightened communities, love is the moving and controlling influence that brings the sexes together in marriage, and thus serves to multiply and perpetuate the race. Some philosophers even affirm that it pervades throughout the entire animal kingdom, and that to it, principally, must be ascribed the propagation of animal

life; others wholly deny to the animal anything partaking of the nature or quality of human love, and maintain that animals are simply endowed with the *sexual instinct*, or the *instinct of reproduction*; and others, still, who may evidently be pronounced of the materialistic or "hard shell" order, contend that this instinct, of itself, is the cause alike of animal and human reproduction. They say that the instinct is amply sufficient to effect the ends contemplated by nature, and that the only difference between the animal and human being is this: in the former, which is not possessed of reasoning faculties, everything but the instinct itself is excluded from its manifestations, while the latter, although equally actuated and controlled by the instinct alone, in consequence of being possessed of intelligence and reasoning powers, accompanies or surrounds his actions with sentimentalities of which the animal is necessarily wholly incapable. Some of those writers who desired to deal more with the effects and consequences of the instinct than with its cause, have cast aside all theories designed to connect it specifically with the moral faculties, and assumed that its origin and existence are exclusively due to the generative organs, and that whatever manifestations may be exhibited by other faculties in relation to it, are simply of a reflex character—being themselves originated by the operations of the instinct itself, and without which they would never have acquired an existence. This, however, renders the sexual instinct none the less exalted in its character, nor the less worthy of especial consideration and care. The prevalent tendency to its abuse is not owing to any peculiarity inherent in itself, or inseparably connected with it, but is mainly, if not exclusively, due to other influences brought to bear directly or indirectly upon the organs in or through which it has its origin.

If the opinions with which we have been furnished concerning the causes that originate, or give vitality to love, are numerous, the definitions that have been given of it may be called legion, and still, we are told, it has never yet been

properly defined. Its vagaries are so multiform, that whenever a comprehensive definition is given intended to fully cover them, it thrusts some new and hitherto unheard of exploit before our eyes, utterly confounding and setting at naught all endeavors to fix limits to it in the form of a definition. It is not surprising, then, that different authors differ as widely in defining it; but however much they may differ in this respect, all are agreed that it is a passion which exercises a powerful influence upon human conduct, being capable of eclipsing every other mental or moral power, inherent or acquired, ever manifested by or through the human organization. Its influence is always overshadowing, so that wherever it exists it will "crop out," or exhibit itself in some form, despite all efforts to conceal it, and hence it is that we are so frequently amused by witnessing the vain and often very ridiculous failures of attempts to hide it. The man who said that he "never had any hankering after poickry until he got to running with that Johnson gal, when he couldn't help making it all the time," was but an uncultivated child of nature, illustrating one of the peculiarities of love. It is true, there may be degrees of violence of this passion, as there are of every other, so that while in some cases it may find vent in the manufacture of faulty but harmless verses, in others it may assume the form of a mania, and circumstances may arise under which this mania will be absolutely the single controlling influence of the individual's conduct and acts. Generally, however, the actions of lovers, at least so far as they affect others, are much more humorous than serious, and rather lead to merriment than harm; but however much the lover may at times amuse others, he need never be without the consoling reflection that most of those who now laugh at him, have passed through precisely similar experiences, having once been laughed at themselves; and, what is more serious, while they laugh, they cannot altogether repress a desponding regret that for them the days of such experiences are past, nevermore to return.

Phrenologists have located the organic seat of love in the cerebellum, and called it amateness, from which Dr. SPENCER claims to have traced a distinct nervous communication with the generative organs. With this key to the mysteries of love, he not only sought to account for the phenomena which, at the age of puberty, attend the enlargement and full development of the cerebellum, but also for all the various manifestations of the animal passions. The phrenological dimensions of this organ are ascertained by the extension of the lower and back portion of the skull, causing, in those persons who have it largely developed, not only a great width between the ears, but also a thickness at the upper portion of the neck, which gives a somewhat roundish appearance to what is commonly called the nape of the neck.

In infants and children the cerebellum is relatively very small, its weight being only from about one-thirteenth to one-twentieth part of the brain. In the adult its weight ranges from about one-sixth to one-eighth—showing the very rapid growth of this organ, as compared with the rest of the brain, from the time it begins to enlarge until fully developed. As manhood or womanhood appears, its increase becomes visible, and at the same time the physical and mental manifestations of love make their appearance. Young boys are generally quite indifferent to female society, and young girls usually care but little for the society of males, but when this organ begins to develop itself the changes that accompany its development soon show themselves. The likes, tastes and desires of the boy and the girl gradually become reversed, and give place to those of the man and the woman. Cases of individuals in whom this organ was but slightly developed have been noted, and they revealed a corresponding lack of the desire for association with the opposite sex. This fact is thus referred to by a writer upon the subject: "Those women whose physical love (or amateness) is small, and their adhesiveness (amicitiveness) or friendship

large, will prefer the society of their own sex to that of men; and to one or more will exhibit the fondest attachment, especially to children, if their philoprogenitiveness (or love of offspring) is equally powerfully developed. They will appear frigid and passionless to the male sex; and even when gifted with beauty and the rest of nature's charms, they are looked upon by men as far less interesting and pleasing than a female who has been blessed with a greater development and manifestation of this organ, with perhaps fewer personal powers of fascination."

In the functions of those organs to which the instinct of reproduction is due, we recognize the great law which nature has ordained for the perpetuation of the race. Perhaps there is not a single function in the whole animal system, the proper and permitted exercise of which has a greater influence upon human character and happiness, or more extensive bearings and effects upon society. Nature has made the exercise of these functions a necessity, and in all well-regulated human organizations their exercise is governed by well-defined laws. In all civilized societies some law or form of marriage has been instituted; and just in proportion as these laws have recognized the rights of both sexes, has individual and general harmony been promoted.

Reference may very properly be made here to several facts which are perhaps almost as generally known as they are unheeded.

In our society, one of the chief desires of the female is, to make use of the common expression, to "get well married." It is almost every young woman's great ambition, for in that state, she fancies, (and by no means incorrectly, provided she chances to "marry well,") the true happiness and comforts of life are to be secured. Perhaps it is to be regretted that the desire to get married is not participated in to an equal extent by males, a fact which must probably be attributed to that peculiar moral status of our people which in-

fluences them to be quite indulgent and lenient to particular vices in the male, and especially severe in their censure and punishment of the same vices in the female. This moral temper may not inaptly be called one of the "relics of barbarism," for when man is in a state of barbarism he has but small regard for the rights of the female. Hence it is that in the far past we find that the woman was but little more than the slave of the man; and it is one of the great characteristics of Christianity, too little dwelt upon, that it recognized the female element, and aimed to bring the two sexes upon a plane of equality. It might be an interesting work, and if rightly performed it would redound to the public good, for some philosopher to determine, and make apparent, the effect our distinction between the same vice, when indulged in by one sex or the other, has upon public morals and female character. It would, at least, be interesting, and no doubt beneficial also, to know how far our leniency, in the one case, serves to promote immorality among men, and how far, in the other, it tends to provoke hypocrisy and immorality among women. It is a rule governing human conduct, that the more a vice is winked at, indulged, or permitted, the more it will extend, and if this redounds to the injury of one sex, it is not unnatural that the injured should seek for compensation in some form. It may be that in these suggestions we could trace the origin of the common opinion, that a woman must indeed be lacking in the cunning of her sex if she cannot hoodwink or deceive a man.

It is said that the marriages which result from first affections are generally the happiest, because first affections are said to be the strongest and purest. This view is almost universally adopted by poets and novelists, who even affirm that the first affection can never be effaced from memory. We are told that "the youthful heart, when it first yields to the tender impressions of pure love, resembles, as nearly as possible, the innocent condition of our first parents in Para-

dise." To a large extent, at least, the views entertained concerning the first impressions of love are correct, and hence the greatest care and circumspection should ever be exercised over them. Especially should this care be observed by the female, with whom, a writer of experience tells us, it is absolutely imperative that first impressions should be kept under continual control, while, at the same time, she should ever be on guard when the object of temptation comes in her way.

With the development of those organs or faculties which give origin to love, it necessarily follows that a desire is created for an object upon which the affections can be exercised. Upon the proper selection of that object the happiness and well-being of the individual is always largely and often entirely dependent; and here is seen the great difficulty and danger which the young have to encounter. An old moralist tells us that marriage is like a divided wheel—when love brings the two divided parts together, the wheel of life will revolve very smoothly; but when fate, or the devil, brings together two parts which are not fellows, there must be a jolt or a jar every time that the wheel goes round, which will render life unhappy and often intolerable. It has been said that nature itself is a much better guide to the young, in the selection of a fit and proper object upon which to lavish their affections, than any which all our efforts could possibly devise; and perhaps it is owing to an impression of this kind that the young are so often left entirely to their own guidance. Such a reliance upon nature alone would probably never be misplaced, if we had not to encounter the fact that in our society the wiles of art are constantly displacing nature, or so controlling its action, that any reliance upon it alone must frequently result in sad disappointment. This, however, does not furnish a good reason for such interferences with the love-making of the young as we often see, and which generally ends in evil. A simple reliance upon nature,

however uncertain it may be, is far less likely to prove disastrous than any attempt, however well-meant, to force the affections of the young into any particular direction. If, then, it may be asked, it is unsafe to leave the young entirely to their own guidance, and equally unsafe to interfere with them, what course can be pursued that will certainly guard against evil consequences? To all such inquiries there is but one rational answer—there never has been, and there never will be, any plan devised that will insure such a placing of the affections of the young as will, in all cases, prevent evil consequences. There is but one remedy possessing any degree of safety, and that consists in giving such instructions to children, as they are growing up into manhood and womanhood, as will make them competent not only to direct their own affections properly, but also qualify them to comprehend, and therefore to avoid or overcome, all dangers that may approach them. It is only by being thus instructed and qualified that they will be enabled to do what, sooner or later, all have to do for themselves—that is, to accomplish their own happiness and welfare, both present and future.

CHAPTER VIII.

IMPREGNATION, OR FECUNDATION.

Is the necessity for the exercise of the sexual instinct the main object designed by nature undoubtedly was procreation—the adaptation of means to bring into contact the two principles, male and female, required to propagate the species. Therefore the immediate effect of these two principles is the production of a condition, within the womb of the female, which is designated as *fecundation*, or more generally as *impregnation*. This, in the order of nature, necessarily leads to the commencement of the formation of the embryo, constituting what is called *conception*, and

this again leads to the final growth of the perfected being

For many years the actual process of impregnation may be said to have been an impenetrable mystery, for the unravelling of which the men of science in every section of the globe exercised their utmost skill, and resorted to innumerable expedients and experiments with animals and fowls, and even with insects; but notwithstanding their continued labors and unceasing efforts, they produced but little beyond unsatisfactory and indefinite conjectures. Many ingenious hypotheses were originated, and many strange speculations were indulged in, until finally two theories were very generally accepted, the first of which asserted that the male semen, after its ejection into the female vagina, was drawn into the womb by a process of suction or absorption, and from thence, by a similar process and by way of the oviducts, reached the ovaries, and there fecundated the egg: the second, in order to obviate some serious difficulties that attended the first, assumed that after the semen of the male had been emitted into the female vagina, its odorous principle, designated as the *aura seminalis*, or as the *aura spermatica*, penetrated through the cavity of the womb, entered and passed through the canal of the oviducts to the ovaries, and there, by its vital power, impregnated or fecundated the ovum. Through this theory the semen of the male came to be regarded simply as the vehicle of the seminal aura, while the properties and powers now ascribed to the seminal animalcules—although the existence of these animalcules had long been known, and their properties were partially understood,—was not only disregarded by many, but the theories advanced concerning their agency in the process

of fecundation were totally disputed by others: and some even went so far as to contend that the very existence of these animalcules was due to decomposition of the semen, and therefore rather indicated a diseased condition of the latter than the fecundating power of the former. Later observations and experiments, continued for years under the most favorable circumstances and aided by some remarkable improvements in the appliances of science, have worked an entire revolution in the opinions of professional men regarding the phenomena of impregnation and conception. This change was mainly effected by the persistent inquiries and experiments of distinguished French physiologists. It may, therefore, be now stated that the generally accepted and popular theory in reference to the process of fecundation is embraced or included in the ten laws or fundamental rules laid down by M. POUCHET. These laws or rules are in substance as follows:

First: Generation is essentially the same in all beings, the human species being no exception.

Second: In all beings the female eggs exist before and independent of conception, the same as the male semen does.

Third: The egg is never impregnated in the ovary or organ that produces it.

Fourth: The egg must always have attained a certain development before it can be impregnated, and must also have left the ovary or organ in which it was produced.

Fifth: In all beings the egg leaves the ovary independent of impregnation.

Sixth: In all animals, the eggs are emitted at certain regular periods, peculiar to each, at which

time there also occurs a special excitement of the female organs.

Seventh : Impregnation can never take place unless the semen is present at the same time with the perfectly developed egg.

Eighth : The menstruation of the human female is analogous to the well known periodical erotic excitement seen in our domestic animals.

Ninth : Consequently, impregnation is necessarily connected with menstruation, and there is, therefore, a period when it can, and a period when it can not occur.

Tenth : In the human being, impregnation always takes place in the womb, or in the very end of the oviduct, next to the womb.

The *first rule* has for its foundation the generally admitted, and it may be said fully established, fact that all living beings originally proceed from an ovum or egg. This egg is universally *formed*, though not always fecundated or matured into the new being, within the body of the female. The peculiarities characterizing different animals in this respect have distinguished them into four classes, designated as *viviparous*, *oviparous*, *oviviparous* and *marsupial*.

1st. The *VIVIPAROUS* class includes all animals in which the egg is not only formed and fecundated, but also developed into the new being, within the body of the female. To this class the organ known as the womb is peculiar, although a similar organ exists in an imperfect form in the class distinguished as the *marsupial*. Examples of the *viviparous* class are familiar to all, including, as it does, our domesticated four footed animals. In this class, also the human species is included.

2d. The *OVIPAROUS* class includes all in which

the egg is formed and fecundated within the body of the female and then expelled, the production of the new being depending upon subsequent development, which is usually effected by the process known as hatching. Examples of this class are also familiar to us, including, as it does, our domesticated fowls and birds.

3d. The *OVIVIPAROUS* class includes all in which the egg is formed and impregnated within, but hatched while passing out of, the body of the female. The most familiar example of this class is the common meat fly.

4th. The *MARSUPIAL* class includes all in which the egg is formed and fecundated within, and in which the young are also partially matured before they are expelled from, the body of the female. Specimens of this class have an imperfect womb, and are provided with a pouch or bag in which the young are received upon being expelled from the body of the mother, and in which they are fully matured. Of this class the kangaroo may be regarded as a perfect example.

Whatever special differences there may be in the modes in which the young are produced by the innumerable differently organized beings that live or move upon the globe, or in its several elements, the origin of the individual of every species is regarded as universally traceable to the egg—thus justifying the statement that generation in all is essentially the same.

The *second rule* is aptly illustrated by our common barn fowl. It is a well-known fact that the hen will lay her eggs when inaccessible to the male, showing that the growth and expulsion of the egg is the work of her own system and is not dependent upon association with the male. The eggs pro-

duced under such circumstances, not being fecundated by the male principle, are incapable, however, of being hatched or developed into the new being, indicating that the only office of the male organs is to supply the principle which impregnates the egg either while it is forming or after it has been formed. In the viviparous and other classes the formation and expulsion of the egg are often attended by circumstances which render the fact that they take place independently of the male less perceptible; but in the almost innumerable researches made by men of the highest scientific attainments and most acute observation, aided by the wonderful powers of the microscope and all the other appliances of science, not a single exception has been found to contradict the general accuracy of the second rule, and it may therefore be assumed as universally applicable.

The *third rule* affirms a point which, if established as a fact, gives us, at least so far as the higher orders of the animal creation are concerned, an insight into the process of fecundation—the subject which has, for so many years, puzzled and perplexed the best intellects in the world. This rule asserts that impregnation never takes place in or at the ovum. The principal reasons upon which this statement is based are found in the peculiar action, and in the internal structure, of the oviducts, described in the chapter on the female generative organs. It is alleged that this action, and that the cilia lining the inner surface of their interior membranes, effectually prevent the passage of any substance whatever from the cavity of the womb to the ovaries, and also that the membranous covering of the ovisac would preclude any substance from coming in contact with the ovum so

long as it remained in the ovisac. While it cannot be reasonably contended that the action and anatomical structure of the oviducts must necessarily and effectually preclude so subtle an influence as the aura spermatica from reaching the ovaries, or from coming in contact with the ovum after it has been set free from the ovisac, neither can it be reasonably denied that this peculiar anatomical structure, of itself, very forcibly indicates an intention on the part of nature to guard against the passage of any substance from the cavity of the womb to the ovaries. It may, therefore, be assumed that this evident intention of nature is at least a powerful, if not a conclusive, argument that nothing does pass from the womb to the ovaries. Hence it necessarily follows that the old theory that the semen, after it had been ejected into the female vagina, obtained an entrance into the womb by the process of absorption, or suction, and was thence conveyed through the canal of the oviducts to the ovaries, and there fecundated the ovum, is incorrect. Different experiments made in various ways have resulted in showing that in order to effect impregnation it is essential that an indefinite particle of the semen, or, more specifically, an indefinite particle of the *thick portion* of the semen, of the male must be brought into actual contact with the female ovum. Such being the case, it follows that the old theory concerning impregnation through the aura spermatica was also incorrect. The point being once established that impregnation does not occur at the ovaries some of the difficulties attending a comprehension of its actual process are removed.

The *fourth rule* is apparently self-evident so far as it relates to the developed stage of the ovum,

because it is not to be presumed that nature would make an exception to one of its fundamental laws, and permit of the fecundation of the egg before it had attained a state of development or ripeness fitting it for impregnation. So far as it affirms that the egg must have left the ovary, the statement is to a large extent illustrated by what has been said concerning the third rule. It is still further illustrated by experiments made upon eggs taken from the ovaries of animals, and also by the anatomical structure itself of some animals, the ovaries being placed so far within the body as to preclude their being reached by the male semen. The manner in which the egg is impregnated in the domestic fowl also affords an illustration, the female being provided with a receptacle or pouch in which the semen of the male is received and retained, and as the egg leaves the ovary it passes by this pouch, is impregnated by attaching to it a particle of the seminal fluid, and is subsequently formed into the perfect egg and covered with the shell to protect it against injury. From these and similar observations made, it is, therefore, concluded that the egg must have left the ovary, in the way established by nature, for a certain period of time, before it is susceptible of impregnation.

The *fifth rule* is apparently embraced in the preceding rules, or the truth of the latter being established that of the former necessarily follows. As, however, these ten rules are so intimately connected with each other, and some of them so interwoven with others that the same fact has a direct bearing upon the whole, each may be advantageously accompanied by some illustration or example. The fact that the egg leaves the ovary independent of association with the male has long

been illustrated by our domestic fowls, and is generally well-known. It is also well illustrated by the numerous species of fishes, the female depositing the eggs independent of association with the male, and the latter impregnating them after they have left the body of the female. It has also been further proved, by ocular demonstration, in regard to the human female, the ovum of the virgin having frequently been received and secured for examination as it left the vagina.

The *sixth rule* is illustrated by various well-known facts. In our domestic animals it is always attended by a peculiar condition which manifests itself in different ways, and is designated as *the heat*. It is well-known to recur at regular intervals, and these can even be predicted with remarkable accuracy. In the human female the ovum leaves the ovary at intervals about a month apart, producing the phenomenon known as menstruation, and after the cessation of the discharge the ovum is found in the end of the oviduct next to the ovary.

The *seventh rule* is also apparently self-evident. Without the presence of the seminal fluid impregnation can not occur, and unless the ovum be in a condition to be fecundated such an event can not take place.

The *eighth rule* is abundantly illustrated by the analogy generally known to exist between the physical functions of the human being and the higher organizations of animal existence. It is also further illustrated by the well-known peculiarities characterizing the human female at the period of the menstrual discharge, the sexual instinct being then specially active, and, in fact, being never experienced by many women at any other time.

The *ninth rule* naturally results from the rules which precede it. If the preceding statements be correct, then the egg can only be fecundated when it is matured and while it is present in the female organ in conjunction with the semen, there being, of course, no possibility of fecundation where no egg exists.

The *tenth rule* simply localizes the place or organ in which fecundation takes place. This renders it, perhaps, the most important of the whole number, and, if true, entirely does away with the mass of theories heretofore propagated, as well as with many still entertained, concerning impregnation. Many experiments have been made to prove the truth of this rule. Numerous animals have been killed, at various periods of time after association with the male, simply to determine to what organ or part the male semen had advanced. It was always found to have advanced as far as the womb, and in most cases no further: generally it simply advanced into the womb, and remained there until its decomposition took place, when, of course, it lost all its fecundating power. To this, however, there are a few indisputable exceptions, the semen or seminal animalcules having been found in the ends of the oviducts next to the womb, and in several cases even so far within the oviducts as to be half-way between the womb and the ovaries; but in no case has either the semen or the seminal animalcules been found at the ovaries, or further within the oviducts than half-way. Many hundreds of observations of this class have always led to similar results, and although it was once supposed that the seminal animalcules had been detected at the ovaries, more accurate observation demonstrated that partially organized fragmentary substances,

now called *false zoospermies*, had been mistaken for the true spermatozooids, the former having a very marked resemblance to the latter. Another remarkable variation from the usual operations of nature, known as *extra-uterine conception*, and which seems to be at variance with this rule, is also sometimes met with. This, happily, very rarely occurs, but if it occurs at all it is strong proof of the inaccuracy of the rule, so broadly laid down, that in the human being impregnation always takes place in the womb, or in the very end of the oviduct next to the womb. Instances have undoubtedly been met with where the embryo began to form in the cavity of the abdomen, at the ovary, or within the oviduct, but in no case did it arrive to such a degree of perfection as to be considered in any other light than as a monstrosity. Developments of this kind are mostly small in size, and of varied forms and shapes; but occasionally they attain to considerable proportions, and have a remarkable resemblance, although they always lack in some particular or part essential, to the perfect human fetus. The most perfect development of this kind may, therefore, be called a monstrosity, showing that in the womb alone the perfect fetus can be formed. That any strange formation of this kind has ever been caused by fecundation of the ovum, at places other than those designated by the tenth rule, is, however, denied; and the existence of such formations is accounted for by the allegation that impregnation was actually effected at the end of the oviduct, and that by some sudden shock, or violent effect produced upon the system, either through fright or otherwise, the action of the oviduct was reversed, and the impregnated ovum carried back toward the ovary. This question may be regarded as being rendered cer-

tain by the different phenomena attending impregnation, by the established fact that sudden shocks or violent emotions *will* reverse the action of the oviducts, and by actual experiments made upon animals. In these experiments extra-uterine conception was repeatedly produced by sudden and violent blows inflicted upon the heads of animals shortly after impregnation had taken place—the shocks thus occasioned to the nervous system producing this effect. Again, it is alleged that many cases, set down as extra-uterine conceptions without careful examination, are not the products of conception at all, but simply imperfect foetal growths, originating outside of the womb, from some unexplained cause; and in proof of this, instances are given in which growths of this kind were found in young children. It is supposed that the vital principle in the ovum may be developed to a certain extent by mere excitement, and among the cases cited to vindicate this supposition is one in which the ovary of a young girl, who had fallen a victim to masturbation at the age of thirteen years, was found to contain foetal remains consisting of hair, bones and teeth. Of this class of formations we have many singular examples, but their detail here would serve but little in further illustration of this subject.

In a general way, then, and having reference to the human female alone, the observations made in relation to the preceding rules may be stated as follows:

First: It has been observed that at about the time the ovum leaves the ovary the phenomenon known as menstruation takes place, and that this is a state of preparation for conception; that when the menses flow at the natural periods, and in

the quantity, it is a sign that the organs of the female are preparing for the process of conception, and that her system is fit for the nourishment of the child; and that menstruation always precedes conception, and terminates after it has taken place.

Second: It has also been observed that after the cessation of the menstrual discharge, or at about the time of its cessation, the egg is received by the fimbriated extremity, and so enters the canal of the oviduct: the exact time in hours or days, after the commencement or termination of the menstrual discharge, when the egg leaves the ovary, being undetermined, but in most cases it is found in the grasp of the fimbriated extremity of the oviduct immediately after the cessation of the discharge, while occasionally not until two or three, and sometimes even four, days thereafter.

Third: It has been further observed that after the ovum has been received in, or entered, the canal of the oviduct, its progress towards the womb is slow, and in some cases it reaches the cavity of the womb in two days while in others it requires six days to do so.

Fourth: The observation necessarily follows that two days is the shortest, and ten days the longest, time required for the egg to reach the womb after the cessation of the menstrual discharge.

Fifth: The fifth observation relates to the length of time the unimpregnated egg remains in the womb, which has been found to vary from two to six days, although usually it does not exceed four days.

Sixth: From the observations made that the ovum may remain at the ovary as high as four days, and afterwards require as much as six days to reach the womb, and then remain in the womb as long as six days, it is concluded that there are

sixteen days between the recurrence of each menstrual period when the ovum may be present in the female organs, and to some extent capable of impregnation.

Seventh: Observations made in one thousand cases to determine the time intervening between the separation of the egg from the ovary and its final expulsion from the womb, if not impregnated, have shown the following variations:

In 2 cases the egg was expelled in 2 days.			
10	"	"	3
40	"	"	4
89	"	"	5
235	"	"	6
230	"	"	7
167	"	"	8
98	"	"	9
70	"	"	10
23	"	"	11
17	"	"	12
13	"	"	13
10	"	"	14
6	"	"	15

1000 cases, none exceeding 15 days.

Eighth: It has been observed that the expulsion of the egg from the womb is usually attended by a slight discharge from the vagina, lasting for several hours or even for one or two days, of a fluid having about the consistence of water, which is generally colorless though sometimes a little tinged as if mixed with blood, and which occasionally possesses an irritating tendency; that this discharge is attended or succeeded by a slight sensation within the womb corresponding to the feeling of heaviness or downward pressure accompanying menstruation, and also sometimes by more or less pain; that this sensation is attended or followed by the discharge

of a peculiar substance, in size approximating and sometimes exceeding that of an ordinary pea, its consistence being thick and mucilagenous, its color white or rather approaching to grey, and its general appearance resembling a clot of thick and firm mucus; and that this clot constitutes the egg and the covering in which it is enveloped.

Ninth: It has also been observed that fecundation generally occurs previous to the ninth or twelfth day after menstruation has ceased, it being ascertained that a longer retention of the egg is usually due to some weakness on the part of the female, and also that it is liable to undergo partial decomposition and thus become unfitted for impregnation.

To produce conception, then, where there is no actual impediment, such as sterility in the female, or an imperfect or diseased condition of the seminal fluid in the male, the advice heretofore given by physicians was correct, although they were for years incapable of giving any reason for it satisfactory to themselves beyond actual observation. This advice may be thus stated: let association be discontinued for a week or two prior to the commencement of the menstrual discharge and while it continues, and then let it be resumed immediately after the menses have ceased.

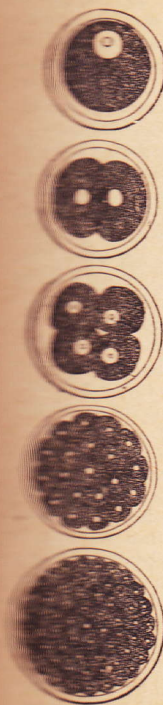
CHAPTER IX.

CONCEPTION AND PREGNANCY.

NOTWITHSTANDING the endless researches and experiments of scientific men and philosophical inquirers, beginning with the origin of science itself and continued during every generation to the present time, the origin of life is no more absolutely nor definitely determined to human comprehension than it was centuries before men perplexed their brains concerning it. The limit of science was reached when the point was determined that the development of all organized bodies was preceded by, or resulted from, what is termed the *organic cell*. So far as we know, and in spite of all the varied efforts made to establish the contrary, every living body proceeds directly from certain parents, the original ancestors of the parents being involved in the darkest mystery, and having existed at a period so remote that a similar mystery renders fruitless every effort at inquiry, and precludes all knowledge concerning them.

"Every thing living comes from an egg," said HARVEY, the illustrious discoverer of the circulation of the blood, as early as the sixteenth century, a statement which time has apparently only the more fully confirmed. In the human being this egg exhibits the same characteristics discovered in the eggs of other organized bodies, and similarly consists of a homogeneous liquid in which the first stage of traceable organization is manifested in the

FIG. 13.



appearance of a granule. This liquid is called the *plasma*, or the *nutritive matter*, from which the new developments take place, and is also said to contain in absolute solution all the chemical elements of structure of the organized body. Fig. 11, page 55, represents the unimpregnated egg, with its germinal disk and adherent granules: Fig. 13 illustrates the progressive division, or segmentation, of the yolk in the human egg, No. 1 representing the unimpregnated egg after the disappearance of the germinal disk and adherent granules. After the egg has been brought into contact with the seminal fluid and fecundated, the yolk divides into two spherical segments, as seen in No. 2, Fig. 13, then into four, as seen in No. 3, and so these subdivisions continue, as seen in No. 4, until finally the yolk is divided into a mass of cells, as seen in No. 5. These cells are reputed to be always even in number, and if otherwise it is alleged the result will be an imperfect being in some particular,

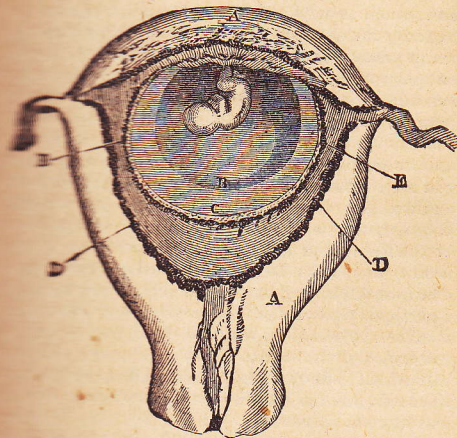
and an absolute monstrosity.

The exact manner in which the egg is impr-

nated, and the manner in which its changes are effected and the causes to which these changes are due, are the subjects of much conjecture and of different theories, but these cannot be regarded as affording accurate knowledge. The theory, however, that the ovum of the female is fecundated through the agency of the seminal animalcules of the male, is now generally accepted, and this result is supposed to be produced by the actual penetration of the ovum by the seminal animalcule—the lodgment thus effected by the latter supplying the wonderful power or principle to the former which results in the subsequent development of the organized living being. The progress of this development is at first exceedingly obscure, but afterwards becomes more apparent, and our knowledge concerning the growth of the embryo, after a certain stage of advancement has been attained by it, may, therefore, be said to bear some approach to accuracy in some particulars, while in many it is absolutely correct.

The ovum, after its entrance into the womb, becomes surrounded by two membranes, the first of which is known as the *amnios* and the second as the *chorion*. During the time the expulsion of the ovum from the ovary is being effected, the womb partakes of the excited action then affecting the uterine system, and this action is continued during the progress of the ovum through the oviduct, producing a change in the womb adapting it for the reception of the ovum. This change is manifested by greater action of the vessels, and swelling and softness of the substance of the womb, while on the inner surface it is attended by an exudation, which, being converted into a spongy membrane, is peculiarly adapted for the adhesion of the ovum with its ragged and vascular surface. This mem-

FIG. 14.



SECTION OF THE UTERUS, WITH THE OVUM AND MEMBRANES.—A A, the womb in outline; B, the amnios, with the fetus; C, the chorion; D D, the decidua; E E, decidua vera. The entrance to the womb is observed as being closed or sealed by a mucus substance.

brane is called the *decidua*, and forms the third by which the amnios and chorion are surrounded.

The AMNIOS is very thin and pellucid at first, but acquires considerable thickness and strength in the latter months of pregnancy. It contains a thin, watery fluid, in which the embryo is suspended, and which is called the *liquor amnii*, and also the *water of the amnion*. The quantity of this liquor is much greater, in proportion to the size of the different parts of the ovum, in the early stages than in the subsequent months of pregnancy. It has formerly been supposed that the embryo was nourished by this liquor, but this is now pronounced incorrect, and its proper use is regarded as furnishing a soft bed for the foetus, providing it with a good defence against external injury, and aiding parturition. It is also credited with effecting the proper position of the foetus and the regular presentation of the head: the foetus being suspended in the liquor amnii, and hanging by the umbilicus, and the head and upper part of the body greatly preponderating, it takes the position, with the head presenting to the orifice of the womb, which is necessary to natural and safe labor, being prevented from shifting in the later months by the closer embracing of the child by the uterus.

The CHORION is the next membrane surrounding the foetus, the space between this membrane and the amnios being occupied by a gelatinous fluid substance in the early months of pregnancy. The chorion originally possesses greater strength than the amnios, but finally comes in contact with the latter, the fluid between them disappearing; and as the amnios acquires strength and thickness the chorion thins and weakens. The internal surface

of the chorion is smooth, its external surface shaggy and vascular.

The amnios and the chorion are developed from the ovum, and the shaggy outside of the latter becomes attached to the womb, or rather to the spongy membrane supplied by the womb.

The DECIDUA, or *membrana decidua*, is supplied by the womb, to the internal surface of which it adheres. It has been supposed that when the ovum leaves the oviduct, it meets with resistance from the decidua, and becoming entangled behind it, the latter is pressed forward and downward into a nest answering in which the former rests and by which it is prevented from falling into the neck of the womb. This covering, by which the ovum is coated over, was called the *decidua reflexa* or *membrana reflexa*. The decidua reflexa is, however, now accounted for by the fact that the entrance of the ovum into the womb is followed by an increase in the development of cells, originating at the points of contact of the ovum with the mucous membrane of the womb, and then speedily involving the entire surface of the ovum and forming a vascular coating for it. Thus the decidua reflexa is formed, and as the developments within the womb proceed to enlarge, it is brought into contact with the proper decidua at every point—a union which generally occurs at about the third month of pregnancy.

The development of the ovum within the womb commences immediately after it has left the oviduct, and its growth, though not as rapid as that which characterizes the subsequent foetus, may nevertheless be regarded as being quite speedy. The new organization may be seen by the naked eye at about the twelfth day. The ovum then has the membranous coverings of the amnios and

chorion, and the whole about corresponds in size with an ordinary pea, and in weight with a single grain. The embryo is now about the size of the point of a pin. From this period to the fifteenth day a small, white, and thread-like formation may be seen, which is regarded as the commencement of the brain and spinal marrow. From the fifteenth to the twentieth day the mouth becomes visible, and frequently the eyes also—the latter first making their appearance at the sides of the head, and subsequently assuming their natural place. From this point it advances, so that it attains to about the size of a large ant by the twenty-fifth day, to which it also bears a marked degree of resemblance. The embryo now weighs about four grains. From this point to the end of the first month it advances so far as to approximate an ordinary bee in size, and bears a strong resemblance to a small worm bent together; the arms become visible, resembling two wart-like protuberances extending out at right angles; they subsequently become curiously folded upon the breast; the head, which has been previously perceptible, is equal in size to the rest of the body, the mouth is traced in a line which becomes visible, and the eyes resemble two minute black specks; the lower extremities appear but as a filamentary appendage to the head, and in resemblance may be compared to a tail, and the weight is increased to about ten grains.

Second month: During the second month the size of the embryo is increased to about an inch in length, and its weight to about one drachm; it is so far developed that it bears some resemblance in its general form to the human being; the arms are increased in length, the fingers being perceptible, but united so as to resemble somewhat the web-

that of the frog; the lower extremities are distinguishable; the cartilage, traceable even during the first month, is now undergoing ossification, and traces of its hardening into bone are seen in the ribs and jaw bones; and rudiments of the first teeth are becoming perceptible.

Third month: At the end of the third month the development measures about four or five inches in length, and weighs about two and a half ounces. Many of the parts are well defined: the mouth is enlarged, and the lips perfect; the nose is distinct; the eyelids, firmly closed, are also perfect; the external ear is perceived; a soft and pulpy mass shows as the brain; the neck is clearly traced; the fingers are formed; the heart is perfectly developed, beats with some force, and blood is seen in the larger vessels; the generative organs are prominently developed; the toes are distinct; and muscular development is commenced and becomes apparent.

Fourth month: Development has rapidly progressed and the different parts have become more perfect. It now measures from about six to seven inches and weighs from seven to eight ounces. The muscles are now distinct; cellular tissue is formed; the intestines are concealed by the formation of the abdomen; the bones have become hardened; the second set of teeth are being formed; the brain has become more solid, and a like result has attended the spinal marrow.

Up to about the middle of the fourth month the development has heretofore passed under the designation of the embryo: after that it has been distinguished as the fœtus. Frequently, however, the distinction is not made, and it is all along spoken of as the fœtus. At about this time, the womb,

which maintained its original place in the pelvis, enlarging and expanding with the growth progressing within it, becomes too confined, and therefore moves or slips into the abdomen. This movement has been known as *quickenings*, because the sensations attending it were once supposed to have been occasioned by the manifestation of life in the fetus itself, in consequence of vitality having at this time been imparted to it! It is probably due to this old error that it became a general law, which still exists to a very large extent, defining and punishing the destruction of the fetus after quickening, or after the advance of pregnancy to the time when quickening usually occurs, as murder; while, if previously destroyed, the offence was regarded as much less heinous, and was generally defined and punished as a misdemeanor. The sensations attending the movement of the womb into the abdomen are generally more or less perceptible by the individual, while it sometimes produces a fainting fit, palpitation of the heart, hysteria, and other marked inconveniences. The effects attending it are produced by the disturbance and derangement of the internal organs, in consequence of the womb pressing against them suddenly and without allowing them time to be accommodated to the change. Sometimes, however, the womb moves so gradually into the abdomen that the change is scarcely felt by the individual.

Fifth month: The development of the fetus has become more rapid in consequence, it is supposed, of the circulation of the blood, which is now found to exist in a perfected state. The fetus is now from about eight to ten inches long, and weighs from fifteen to sixteen ounces; the lungs have grown in size, and can, to some extent, be dilated;

the *meconium*, by which is meant the green excrementitious substance that is found in the large intestines of the fetus, which had previously had entrance, is seen to be lower in the intestines; the nails are becoming perceptible; the skin is better defined and its strength is increased; and generally every part of the fetus exhibits increased growth and perfection.

Sixth month: The fetus now measures about twelve inches, and weighs from one and a half to two pounds: the hair or down is being developed; the nails have become marked; and the substance known as fat is being formed.

Seventh month: A length of about fourteen inches, and a weight of about three pounds have now been attained; the hair and nails have become perfected; the bones have acquired considerable firmness; the testes have descended into the scrotum in the male, and the ovaries have reached their proper position in the female; and, generally, the whole being has attained a great degree of perfection—such a point of growth that life may now be sustained and development continued outside of the womb.

Eighth and Ninth months: During this period the weight and size of the new being is increased until finally it is fully prepared for sustaining an independent existence. At birth the weight of nature is subject to much variation, but from twenty thousand cases the following result has been obtained:

Average weight at birth.....	6 1-4 pounds.
Maximum " "	10 1-2 "
Minimum " "	2 1-4 "

The manner in which the germ, the embryo, and the fetus are nourished can not be said to be at

present comprehended. Every theory advanced is, somehow, contradicted by some strange development which either could not have taken place had the theory been absolutely true, or which is of such a nature that its reconciliation with the theory becomes impossible. The yolk of the ovum is supposed to supply the first stock of nourishment, and to furnish the main, if not entire, material required in the commencement of the formation of the new being. When this is exhausted, the office of nutrition or supply is said to devolve upon the chorion, the fleecy surface of which is supposed to absorb a nutritive fluid derived from the decidua. This source of nutrition is also temporary, and the more permanent means of nourishment are then accredited to the placenta.

The PLACENTA, also known as the *afterbirth*, makes its appearance at about the close of the second month of pregnancy, and subsequently becomes fully established and remains until the birth of the child. Its formation is brought about in this manner: the *villi* or *villosities*, the minute papillary elevations existing on the chorion, are developed into, or from them arises, a series of vessels or blood tubes which become intermingled with similar vessels arising from the womb at the same time. At first the vessels of the fetus are distributed over its surface, but finally accumulate and are massed at a point. This accumulation is supposed to take place upon the same principle that the roots of a plant stretch towards the soil best suited to it—it being observed that this massing of the vessels takes place at the point which is supposed to be best suited to obtain an abundant supply of nutriment. This massing or accumulating of vessels forms the placenta, so called from its

resemblance to a cake. It is a circular, flat, vascular, and apparently fleshy substance; and at the full term of pregnancy is over one inch in thickness in the middle, gradually thinning towards the circumference, and about six inches in diameter. It extends over about one fourth part of the outside of the fetus. The surface by which it adheres to the womb is lobulated, or marked by small lobed divisions, and of a convex shape: the other or foetal surface, which is covered with the amnion and chorion, is concave and smooth, but raised into irregularities by the numerous and tortuous ramifications of the blood vessels, and near its centre the umbilical cord is inserted. It is composed of arteries and veins, with a mixture of pulpy or cellular substance, and usually adheres to the fundus of the womb. It is not, however, confined to this point, and may form at other places. It even forms sometimes so as to cover the mouth of the womb, thus causing what is called a *placenta presentation* in delivery, and as it must necessarily be lacerated or its connections torn up, flooding is sure to follow and generally to a very great or dangerous extent. Although the placenta seldom adheres, in two successive births, to the same part of the womb, nature evidently indicates the fundus or upper part as its proper position.

The umbilical cord, or navel string, proceeding from the navel of the fetus and extending to the centre of the placenta, establishes the connection of the fetus with the mother. It is composed of a cutaneous sheath, cellular substance, and an artery and two veins by which the fetus is supplied with pure blood from the placenta, and which return the blood to the placenta after it has been used. It varies in length, but at the full period of gestation it

may be said to be from eighteen inches to two feet long, and about half an inch in diameter.

The placenta is credited with answering all the purposes of nutrition, secretion, and respiration—with being the means through which the foetus is supplied, from the blood of the mother, with the material necessary for its growth. The direct manner in which this is done is not fully established. Dissection has demonstrated that the placental vessels of the foetus do not touch the surface of the womb, but communicate with the system of the mother through the vessels of the womb which pierce the deciduous membrane. There are, then, two distinct systems of vessels, and one of these has been called the *maternal* and the other the *foetal*. The blood of the foetus is distinct from, and independent of, that of the mother, alike in its formation, increase, and circulation, but the material or matter from which it is formed is derived from the mother. It is, therefore, concluded, that the maternal and foetal vessels so anastomose or intermingle with each other as to insure a perfect means of exchange, and at the same time prevent intermixture—the blood in each being kept separate, and, by a deciduous layer, prevented from intermingling or mixing, and yet being brought into such close contact or communion as to admit of the passage of nutritive matter to, and excrementitious matter from, the foetus.

It was at one time supposed that the liquor amnii furnished a large proportion of nutritive matter to the foetus, either by being absorbed through the skin or by being taken into the stomach, but this supposition is now generally abandoned and regarded as erroneous.

It may here be added, that whatever may be the

exact manner in which the end is effected, there can be no doubt that the work of foetal nutrition is carried on through the placenta and umbilical cord, and that the nutritive matter is derived from the blood of the mother. When, therefore, the child is matured and leaves the womb, the placenta ceases to be of further use and is thrown off with the other secundines, with its maternal and foetal parts unseparated.

CHAPTER X.

SIGNS AND DURATION OF PREGNANCY.

In consequence of its nerves the womb has an extended and powerful influence over other portions of the body, either directly or sympathetically, and any change taking place within it must necessarily be attended or followed by manifestations experienced or visible in the general system. The signs of pregnancy, however, which are based upon any influence of this kind exercised by the womb, are necessarily uncertain, because any irritation of that organ is equally capable of producing like results.

There are exceptional cases where the fact that conception has taken place can probably be told at the earliest moment—some women experiencing internal pains, shuddering, depression, creeping of the skin, fainting, and other sensations immediately after coition; and as these are peculiar to, or only experienced at, such times as are attended by conception, they are invariably, and seldom incorrectly, taken by them as a sign of pregnancy.

Signs of this kind are, however, only experienced by a very limited number of women.

The first circumstance that renders it probable that pregnancy exists, is the suppression of the menstrual discharge. This suppression, however, is not always perfect, a partial discharge sometimes occurring after pregnancy, which is supposed to proceed from the lower part of the womb. Where the suppression is sudden and total, it is generally a strong presumptive sign, and is very frequently accompanied by fullness in the breasts, headache, flushings in the face, and heat in the palms of the hands; but as these symptoms are commonly a consequence of suppression, and as it may be occasioned by the change of life consequent upon marriage, or by other accidental causes, they can not be taken as any conclusive indication of pregnancy, but simply as furnishing a strong presumptive sign.

In pregnancy, an alteration takes place in the faces of many women, so marked that it is regarded as a sign. The features acquire a very noticeable sharpness; the mouth appears to have grown wider; the eyes also seem to have grown in size, are often surrounded by a black circle, and frequently present a dull, heavy, or glassy appearance; the skin becomes pale, and is often marked by red spots or freckles; and a general change, which is rather difficult to describe, but which is well known to women, pervades the whole countenance. These alterations are generally attended by considerable irritation of feeling, and an unstable and variable temper, and these often lead to actions of which the woman would, under different circumstances, never be guilty. The time at which symptoms of this class commence, varies from a

few days to several months after pregnancy. Their cause is ascribed to irritation produced in the womb in consequence of impregnation, and as the irritation of that organ, when produced by other causes, may be attended by similar results, they simply furnish signs from which pregnancy may be presumed, unless they can be accounted for otherwise.

Some weeks after pregnancy, the enlargement of the womb, which gradually progresses after conception, causes it to sink to some extent, and this draws down the intestines: as a consequence the abdomen becomes somewhat flattened, and thus furnishes an indication that pregnancy has taken place; but as the like result may attend any enlargement of the womb, no matter how caused, this indication must be looked upon simply as a presumptive sign.

The sympathy existing between the womb and the cerebellum is also credited with producing another sign, which is sometimes entitled to a considerable degree of reliance. This is seen in an enlargement of the neck, which commences to increase in size, sometimes at a very early period of pregnancy, and proceeds gradually, so that many women base their opinions of their condition upon careful measurements of the neck, made at short intervals of time, or daily.

Pregnancy is also frequently attended by what is commonly called *morning sickness*, and this is, therefore, placed among the signs indicating its existence. It manifests itself as follows: Upon rising in the morning, although the rest of the night had been perfect and the female in absolute health, the stomach is suddenly affected in such a manner as to produce retching and vomiting. Morning sickness is not always an attendant of

pregnancy ; but when it is experienced, it generally begins to manifest itself about the third week, although it may commence much earlier, or be postponed to the last months, in which latter case it is generally more severe and occasions much distress. When it commences in the early stage of pregnancy, it usually terminates about the fourth month, or shortly thereafter. A similar condition of the stomach may, however, be produced by many causes; but when occasioned by pregnancy it can generally be distinguished by the fact that it is but temporary, and not attended by the general ill-health which always follows disarrangements of the stomach when induced by other causes.

Changes of the breasts are also looked upon as indications of pregnancy. These changes may commence in its early stages, or be postponed for some time, and even to within a short time of its termination. They are generally attended by symptoms described as peculiar sensations of stretching, throbbing, and tingling in the middle of the breasts, and are accompanied by an increase in the size and fullness of the breasts. Similar changes may, however, be produced by other causes, and therefore this simple increase in size and fullness of the breasts is, of itself, no certain sign ; but another change also attends them, which, if well marked, is of greater, though not certain, significance. This is the change effected in the small red or brown circle which surrounds the nipples, called the *areola*. This circle becomes enlarged, sometimes attaining an inch and a half in breadth, its color becomes more prominent or darker, and slight elevations make their appearance upon it, from which, in consequence of the skin becoming softened, a moisture exhales which frequently stains

the linen in contact with them. The nipples also become more prominent and partake of a state of turgidity, and generally the entire breasts are so changed as to present a very marked difference as compared with their previous condition. As pregnancy advances the milk also begins to make its appearance in them. This was at one time looked upon as a certain sign of pregnancy. While the changes in the areola, and the secretion of the milk, may always be regarded as very marked signs, they are by no means conclusive, as other causes may co operate to bring about very nearly, if not exactly, corresponding conditions.

Another sign is furnished by the irritation which the condition of pregnancy occasions to the parts contiguous to the womb, but these are so readily mistaken by the person that but little reliance can be placed upon them. When, however, they are not mistaken they furnish a very definite indication of pregnancy.

From the fourth month more certain signs are furnished. It is about this time that the womb ascends into the cavity of the abdomen, which, if the ascent be sudden, is attended by peculiar sensations, and has therefore been erroneously called *quickening*. At about this time, however, actual movements of the child, or what is properly meant by the term quickening, do take place, and these should furnish an unmistakable sign ; but, as a knowledge of the sensations which they produce depends upon the female almost entirely, they become as unreliable as any of the other signs. It is impossible to describe, in a manner to be fully comprehended, the actual feelings produced by the movements of the child, and therefore other sensations may be, and frequently are, mistaken for

those of quickening. It is not an unusual occurrence for women to be positive of being pregnant because they are assured of having experienced the feelings of quickening, and subsequently find that they were altogether mistaken. Flatus, or wind generated in the cavities of the body, has very frequently occasioned such mistakes. When, however, sensations of this kind are experienced at the proper time, and when the other symptoms have been manifested without irregularity, we may feel assured that pregnancy does exist.

After the fourth month the rapid enlargement of the womb necessarily greatly distends the abdomen, into which it gradually rises higher. The protrusion of the abdomen has, therefore, been considered as a certain sign of pregnancy; but as every circumstance which increases its bulk produces the like protrusion, this sign cannot be regarded as in any way definite, unless other concurrent signs have been duly marked.

The regular and gradual increase of the size of the abdomen, the suppression of the menses and the symptoms attending it, taken in connection with the sensations ascribed to movements of the foetus or quickening, may, however, be regarded as very certain signs that pregnancy does exist. The only thing likely to mislead concerning them is found in the woman herself; for such are the desires and feelings of every woman at this time, that she is very prone, in her anxiety that such should be her condition, to deceive even herself, and while she magnifies every circumstance that indicates such a condition she will also conceal, unconsciously to herself, every circumstance that would indicate the contrary.

When all or a number of the signs enumerated

and no irregularities attend them, it is very generally safe to conclude the woman pregnant. There are, however, other means of definitely ascertaining the fact after pregnancy has advanced to a certain stage. An internal examination will always enable the skillful physician to determine the matter with accuracy.

At the end of or during the fifth month, the foetus has generally attained a growth when its existence can readily be determined by the process known as *auscultation*. This may be practised by the ear alone, or with the assistance of the stethoscope—in either case the requisite skill will determine the fact. The object of auscultation is to hear the beatings of the heart of the foetus, and the manner in which an examination by it is conducted is as follows: The ear is placed on the abdomen towards the left side, about midway between the navel and the pubes, care being observed to avoid all pressure and yet exclude all external sounds. If no beatings of the foetal heart are heard, the position of the ear is changed, and so it is moved from place to place, at intervals, until the beatings are detected. This changing of the position of the ear, in order to find the point where the beatings can be heard, is rendered necessary in consequence of the fact that the position of the child in the womb is not always the same, and because it is desirable that the ear should come immediately opposite the heart of the foetus in order to hear its beats distinctly; and even then other sounds are often mistaken for them by the unskillful examiner. By this process of examination it is claimed that practised ears have heard the beatings of the foetal heart as early as the fourth month of pregnancy, although they are usually not heard until towards the end

of the fifth or sixth months. The sounds attending the beatings of the foetal heart are the same, although the beats themselves are almost twice as rapid, as those of the heart of the mother, and by becoming familiar with the latter, which can be done by this process of auscultation, the former are the more readily detected. Ignorance of the one is very apt to lead to deception in regard to the other. By this process, also, the position of the child in the womb may, to a large extent, be ascertained, and it may also be determined whether a single foetus exists or whether there are twins—in the former case the beatings of one heart alone can be heard, while in the latter the beatings of two become apparent. In the early months, however, the foetus may shift its position from time to time, so that the beatings of the heart may now be heard at one place and then at another, but subsequently it becomes fixed and stationary, and by this process of auscultation, its position in the womb, in reference to the head determining upward or downward, may be ascertained with some degree of accuracy.

The absolute time during which pregnancy may continue, in any given case, cannot be calculated, because it cannot be determined precisely when impregnation occurs; and even if this point was determined, it would not enable us to calculate accurately the duration of pregnancy, although it would serve to secure an approximation to the time. Observation, however, has established the fact that ordinarily 40 weeks, or 280 days, constitute the limit of its duration. Upon this subject the following facts are furnished by Dr. R. LEE, in his *Lectures on the Theory and Practice of Midwifery*:

“The Roman law fixed the period of gestation at

ten lunar months. The civil law of Prussia ordains that a child born 302 days after the death of the husband shall be considered legitimate. By the law of France the legitimacy of a child cannot be called in question who is born 300 days after the death or departure of the husband. The laws of England declare that the usual period of human utero-gestation is nine calendar months, or 40 weeks; the law is not exact as to a few days. Nine calendar months contain only 275 days, and only 273 or 272 if February be included. To fix bastardy on a child in Scotland, absence must continue till within six months of the birth, and a child born after the tenth month is accounted illegitimate.

“In the evidence given in the Gardner Peerage cause, the period of utero gestation was limited, but not strictly, by some of the witnesses to 40 weeks, or 280 days; by others it was extended to 311 days. Dr. MERRIMAN thinks the greatest number of women complete gestation in the 40th week, and next to that in the 41st. Of 114 pregnancies, calculated by him from the last day of menstruation, and in which the children appeared mature, 3 deliveries took place at the end of the 37th week; 13 in the 38th; 14 in the 39th; 33 in the 40th; 22 in the 41st; 15 in the 42d; 10 in the 43d; and 4 in the 44th week.”

A decision was rendered by one of our American courts that the condition of pregnancy may continue for 313 days. In this case the child was born on the 30th of January, 1846, and the mother testified that conception must have taken place on the 23d of March, 1845. Decisions of this kind, however, afford no information of any consequence, any more than those sworn statements of mothers who have come into court and testified that they were

pregnant during a period of twelve months. Whenever the usual time is much exceeded, there is always good ground for suspicion, notwithstanding the decisions of courts, or the testimony of mothers given under circumstances rendering their statements peculiarly subject to doubt.

There are also some well authenticated cases where parturition occurred some considerable time before the 280 days of gestation had expired. The opinion is generally entertained that the child born before the seventh month cannot live, and as a rule this may be regarded as correct. There are, however, a few exceptions, tolerably well authenticated, in which the births took place at six months, and the children arrived at the age of maturity, and even attained extreme old age; but exceptions of this kind are rare, and usually the prospects of the child's life, if ushered into the world before the seventh month, are exceedingly limited. So far as the law can establish any fact of this kind, the period may be said to be fixed at six months.

In this connection it may be observed that, unless labor be brought on prematurely, it usually commences at the termination of a certain number of full months. As impregnation takes place at the time of one of the monthly periods, so parturition occurs at what would have been the time of one of those periods had there been no cessation of the menstrual discharge. It rarely ever happens at a time which would have been between two of these periods, or between a full month dating from one period to another. If, therefore, the seventh month of pregnancy be passed, it is very certain that parturition will not occur until the eighth month, and if the eighth month pass by, it is very probable that it will not occur until the ninth. The like observa-

tion has also been made in regard to abortions, these generally happening, unless produced by violence or some specific cause of like kind, at the end of a full month.

CHAPTER XI.

PARTURITION.

THE expulsion of the foetus from the womb is called *parturition*. At the time this takes place the foetus is matured, and though its dimensions, which must necessarily have a great influence upon easy and safe parturition, can only be determined subsequently, observation has shown that the average size of the fully grown foetus is about as follows: length from head to breech, twelve inches, from head to feet, eighteen inches—widths across shoulders and hips about four inches. These widths across the shoulders and the hips are, however, reduced half an inch or more by compression. The head, therefore, becomes the most important part: it is so generally first presented that the variations are ascertained to be but one in about sixteen. It is divided into different diameters, generally ten in number, by which the distances between different points are designated. These distances range from about three to five inches; but the position of the head can generally be so changed as to present the diameter best adapted to the diameters of the pelvis, the greatest of which is about four and a half inches. The head, however, is not characterized by a solid skull; but the different bones of which the skull is formed are separated by spaces which are

filled up by membranous substances, thus not only permitting the bones to be pressed together but even to overlap each other. The size of the head can, therefore, be much diminished during its passage through the pelvis.

When the child is prepared for an independent existence, the womb, in which it had so long existed in different stages of development, also becomes prepared to relieve itself of its burthen. The cause which produces the movements and exertions of the womb in the beginning and progress of labor, is not comprehended, although it is presumed to arise from some effort on the part of the fœtus, which is supposed to exercise an influence upon the muscular structure of the womb. It is also supposed that the fœtus exerts a strong influence in effecting its expulsion, an inference based upon the fact, observed where women died in childbirth, that the living fœtus in the womb of a dead woman is expelled with much greater facility than a dead fœtus in the womb of a living woman, which either indicates that the womb and fœtus have a co-operative action tending to the same end, or that the death of the latter has, at least temporarily, a more serious effect upon the muscular action of the former than the death of the mother. Whatever may be the cause or causes which occasion, and subsequently continue or renew, the action of the womb, the action itself always takes place at the proper time, and all the different organs seem to be prepared for it. This action consists of the muscular contraction of the womb, and that of the abdominal muscles, and being attended by certain phenomena, which occur in succession and continue a certain time, it has been divided into several periods. These periods have been defined

by M. MAGENDIE, the eminent French physician, as follows:

"*The first period of childbirth*: It is constituted by the precursory signs. Two or three days before childbirth, a flow of mucus takes place from the vagina, the external genital parts swell, and become softer; it is the same with the ligaments that unite the bones of the pelvis; the *cervix uteri* (neck of the womb) flattens, its opening is enlarged, its edges become thinner; slight pains, known under the name of *flying pains*, are felt in the loins and abdomen.

"*Second period*: Pains of a peculiar kind come on: they begin in the lumbar region, and seem to be propagated towards the *cervix uteri*, or the *rectum*; they are renewed only after considerable intervals, as a quarter, or half an hour. Each of them is accompanied with an evident contraction of the body of the uterus, with tension of its neck, and dilation of the opening; the finger directed into the vagina discovers that the envelopes of the fœtus are pushed outward, and that there is a considerable tumor which is called the *waters* (the waters of the amnios): the pains very soon become stronger, and the contractions of the uterus more powerful; the membranes break, and a part of the liquid escapes; the uterus contracts on itself, and is applied to the surface of the fœtus.

"*Third period*: The pains and contractions of the uterus increase considerably; they are instinctively accompanied by the contraction of the abdominal muscles. The woman, who is aware of their effect, is inclined to favor them, in making all the muscular efforts of which she is capable: her pulse then becomes stronger and more frequent; her face is animated, her eyes shine, her whole body is in

extreme agitation, perspiration flows in abundance. The head of the fœtus is then engaged in the pelvis; the occiput, placed at first above the left acetabulum (the cup like cavity in the bone of the pelvis, known as the *os innominatum*, in which the head of the thighbone is fixed), is directed inward and downward, and comes below and behind the arch of the pubis.

"*Fourth period*: After some instants of repose, the pains and expulsive contractions resume all their activity; the head presents itself at the vulva, makes an effort to pass, and succeeds when there happens to be a contraction sufficiently strong to produce this effect. The head being once disengaged, the remaining parts of the body easily follow on account of their smaller volume. The section of the umbilical cord is then made, and a ligature is put round it at a short distance from the umbilicus.

"*Fifth period*: If the accoucheur has not proceeded immediately to the extraction of the placenta after the birth of the child, slight pains are felt in a short time; the uterus contracts freely, but with force enough to throw off the placenta, and the membranes of the ovum: this expulsion bears the name of *delivery*. During the twelve or fifteen days that follow childbirth, the uterus contracts by degrees upon itself, the woman suffers abundant perspirations, her mammæ are extended by the milk that they secrete; a flow of matter, which takes place from the vagina, called *lochia*, first sanguiferous (conveying blood), then whitish, indicates that the organs of the woman resume, by degrees, the disposition that they had before conception."

In addition to the preceding description, it may

be stated that a short time previous, sometimes several days, to parturition taking place, the woman finds great relief in her powers of breathing and digestion, and in consequence loses her anxiety for a time and becomes unusually lively, little thinking she is so near her travail. This relief results from the descent of the womb lower into the abdomen, relieving the diaphragm and stomach from considerable of the pressure that had before existed. Such, however, is not always the case, and discomfort and melancholy are often exhibited in place of this liveliness of feeling. At about this time numbness in the lower limbs, and a constant desire to urinate occasioned by pressure upon the bladder, are also usually experienced, and these are regarded as symptoms of a presentation of the head of the fœtus, and that the subsequent labor will be natural and comparatively easy.

In many cases the several stages of labor are attended by the severest pains and sufferings, while in others very little of the kind is experienced. When these pains are fully manifested the female is, as it were, powerfully and painfully drawn together internally; the body trembles all over, and she becomes deathly sick, and pale, and faint, and gasps for breath; the pulse becomes excited, the countenance bespeaks the dreadful apprehensions of the mind, and is pervaded by an expression indicative of the wildest excitement, anxiety, and the most acute suffering; at times she is rendered delirious, and in her efforts to assist the natural action of the muscles, she frantically grasps and clutches at any object within her reach, gives vent to agonizing screams, and by powerful strains tries to throw off her burthen. These pains have been described as grinding, cutting, burning, and in all

the various ways by which an idea of acute suffering can be conveyed, and are felt sometimes in one part of the body, then in another, and again in different places at the same time. It has, however, been observed that these violent exertions, pains, and cries seem to have some special effect in promoting the expulsion of the child; and as they cannot be sustained continuously, they are attended by periods of repose, during which the patient may even snatch some moments of sleep.

Immediately after the birth of the child, and before it can be removed, proper attention should be paid to the umbilical cord, or navel string, by *tying* it, as it is called. Although this may not be absolutely necessary, nor any more required by nature than some authors suppose, the usual practice is to attend to it, and it is, no doubt, always expedient to do so. The tie is made by twice passing around the umbilical cord a strong thread or string and then tying it into a secure knot. This is done at two different places—first at a point about *two* inches, and then at another point about *four* inches, from the navel of the child. The cord is then cut between the two points by a sharp instrument. In case the child does not breathe, or appears to be inanimate, the first tie should be made about four inches from the navel, because it may become necessary to cut the cord again. Care must be taken, in making the first tie, not to include in it any of the skin of the abdomen, should it extend a little over the cord, as it often does, and if any portion of the intestine be found in the end of the cord near the navel, it should be carefully moved back into its proper place (which may be done by the thumb and finger), and every possibility of its being caught in the tie avoided. The

object of the tying is to prevent bleeding, and in some cases in which it was neglected, or regarded as unnecessary, children have been known to die from loss of blood. From the fact that the cord is connected with the placenta, and that the placenta itself is afterwards expelled, there seems to be no reason for the tying at the second point, and, therefore, it is not always, and by some practitioners it is never, done.

After the expulsion of the child there is at once a change indicative of ease and comfort: the effect of the agonies previously suffered, almost instantly passes away and is superceded by a state of repose and even of enjoyment. This, however, is again interrupted by the efforts subsequently required to expel the placenta.

The placenta is attached to the womb, and the latter, by its contraction soon after the birth of the child, separates the former. This is attended by fresh pains, more or less severe, and should take place without much delay, lest the mouth of the womb contract and so render its removal artificially necessary. It usually separates and passes away, if a little assisted, in the course of half an hour after the child's birth, and delay in its removal for an hour, or even a less time, is regarded as being likely to produce some difficulty. It was, no doubt, intended that the labor of expelling the placenta should be exclusively performed by the muscular power of the womb, but this power often becomes so weakened that it must be assisted. This assistance is rendered by gently pulling at the cord, in a downward and backward direction, being very careful not to exercise too much force. The use of force is nearly always sure to be productive of bad results, such as tearing the cord, which may occa-

sion much delay and difficulty, or pulling down the womb, which may occasion irremediable evils, such as its inversion or its subsequent falling. By placing one hand over the position occupied by the fundus of the womb and applying a little pressure, its contractile power is stimulated or aided, while any downward movement may also be detected, in which case pulling at the cord must cease. It is a deplorable fact that ignorance or carelessness in this particular is constantly productive of great mischief and suffering. After the removal of the placenta, it is a common practice to pass around the body of the patient once or twice, and as low down as possible, a linen bandage about four inches in width. This is closely, but not too tightly, drawn, and well secured. After having enjoyed some little repose, such means may be adopted as the condition of the patient may require for comfort, being careful to guard against cold and against disturbing her rest as little as possible.

The duration of labor and its attendant circumstances are not always the same. They depend very much upon the muscular vigor of the womb, and the general development of all parts of the body—therefore few cases are met with in which there is a correspondence in time. Observations made have, however, fixed its average duration, at from eight to twelve hours. Civilization, and the modes of life to which it often leads, seem to exercise a peculiarly debilitating influence upon the physical powers of the female, which appears to be especially manifested during parturition. While those women who apparently enjoy all its advantages experience long delays, and the most excruciating tortures, in the beginning and progress of labor, those who enjoy fewer of its privileges, and

whose habits of life are less restricted by its so-called refinements, are much more exempt from the evils attending childbirth. In most instances, among the women of rude and uncivilized nations, the duration of parturition is so extremely short that it is over in much less time than is required to summon attendance by their more refined sisters, and the pains and difficulties attending it are so limited that they pass unnoticed. Corresponding examples are also sometimes met with in civilized communities, but these are always confined to such women as are in vigorous health, and whose habits and practices, to a large extent at least, conformed to those requirements of nature which will always secure that development of body necessary to enable it to discharge all its functions with ease and comfort. It is a matter of congratulation, that, notwithstanding the pains and sufferings too often incident to childbirth, as a general rule but little or no assistance is needed during parturition—nature itself accomplishing the work. It is, however, always desirable that skillful aid should be in attendance to render such assistance as any emergency may demand, but the expulsion of the child should be the work of the womb and muscles exclusively; and so long as they retain any power of action, no matter to what stage parturition may have progressed, no force should be used. Even when, by exhaustion or otherwise, they lose their power of action, and the application of force becomes both proper and necessary, it must be exercised with the greatest care and in the gentlest manner.

One of the first things to be done to the child, and which should be attended to as soon as it becomes possible to do so, is to remove any mucous

substance adhering to the mouth or nose, so that the process of breathing may at once be established. The entire face and head are sometimes covered by a thin membrane, which is not always as perceptible as would naturally be supposed, and if not removed it will cause suffocation. This membrane is commonly called the *caul*, and as the ignorant and superstitious have ascribed to it some very wonderful and mysterious properties, we not unfrequently see them becoming the dupes of knavish pretenders who, having unfortunately escaped suffocation in infancy through the care of the midwife, were thus preserved to arrogate to themselves some special and mysterious virtues in consequence of having been "born with a caul." The caul is simply regarded as a part of the amnios, which is sometimes separated from the placenta and adheres to the head and face of the child.

The condition of the child must be immediately ascertained, and the proper efforts made to correct any defect that may exist. Sometimes the heart is found to beat in the order of nature, while its body is pale, cold, and apparently inanimate—no breath nor effort at breathing whatever being perceptible. This condition has been named *asphyxia*, and the means resorted to to remove it consist in wrapping up the body and limbs warmly, leaving the head and chest bare, and then exposing the head and chest to the free atmosphere (if the weather be not too extremely cold), which may be done through the door or window. If this fail to start breathing, the object may perhaps be accomplished by the application of cold water to the chest and face, by tickling the throat with the furred portion of a feather, or by rubbing the breast with the palm of the hand. If these efforts fail, by breathing through

the mouth of the child its lungs may be filled with air, and then by pressing upon the chest they may be emptied again. This may be again and again repeated, the mouth of the adult being closely applied to that of the child, and care being observed not to breathe rapidly, nor hard, nor with long breaths; the object simply being to fill the lungs of the child and not to injure them by exerting any strain upon them. Some very remarkable cases are given in which infants were made to breathe by this mode of procedure: the proceeding being continued uninterruptedly for some hours, and the children being finally restored although all hope had been abandoned in consequence of the almost imperceptible beats of the heart. It may, therefore, be laid down as a rule, that these efforts should not be abandoned so long as the least motion of the heart can be perceived, nor so long as there is any warmth in the body.

Sometimes, when labor has been prolonged or difficult, the child may have undergone such a degree of pressure as to manifest no sign of life. The body may be warm and the limbs free of all rigidity, but the former will present a swollen appearance, and the latter will manifest no sign of motion nor the least symptom of muscular exertion. The face will also appear swollen, and of a bluish tinge in color, while the pulsations of the heart will scarcely be perceptible. This is called an *apoplectic* condition, and the infant is generally successfully brought out of it by exposing its naked body to the cool air, or by fanning it; or, if this fails, by cutting off the end of the umbilical cord, near the tie, and permitting a little blood to escape—in quantity about equal to two or three teaspoonfuls—before re-tying it.

The washing and dressing of the infant are simple operations, and yet they are often so performed as to produce much annoyance. In the former, the only end to be aimed at is cleanliness, which may be accomplished by the use of a little sweet oil, the mildest of soap, and a little luke-warm water—the oil being first applied to soften any mucous substance that may adhere to the body. The operation of washing and drying should be performed without rubbing, and be as speedily ended as may be, and yet be so thorough as to secure perfect cleanliness of the skin without having irritated or injured it. The dressing should have regard to warmth and comfort, the article next to the skin being of soft linen, and everything worn being so loose as not to occasion any pressure. The head should be kept free, or at least not too warmly covered. The dressing of the cord is effected by taking several pieces of soft linen and making a small hole in them, and then applying a little oil to them: the pieces of linen are placed on top of each other, the cord is passed through the holes, and then covered by another piece of linen, after which a bandage is passed over it and around the body several times, and then well secured.

In the ordinary course of natural labor, as seen from the foregoing, there is but little required, nature always supplying the means necessary to the end. The great danger, however, which is always to be apprehended and guarded against, during and immediately after parturition, is the flow of blood known as *flooding*. This is always dangerous, and frequently so great as to result in death in a very short time, unless promptly checked, an end which is sometimes very difficult to accomplish. There are undoubtedly cases in which flood-

ing cannot be avoided, resulting, as it may, from the bursting of surcharged and swollen veins, from the rupturing of vessels in the womb which at this time are engorged with blood, and from the necessary tearing of the placenta when it presents; but in too many cases it is produced by unskillfulness and violence in efforts to aid the womb in its labors. This is especially the case in improper and forcible interference to remove the placenta. From a previously quoted author the following extracts are made in allusion to floodings thus produced:

“But one of the most dangerous varieties of uterine hemorrhage is that which follows the expulsion of the placenta, or its removal from the uterus by art. Sometimes the blood escapes in great quantities from the uterus immediately after the removal of the placenta, and the pulse ceases at the wrist, and consciousness is entirely lost in a few seconds. There is no symptom before labor has commenced, or during its progress, to warn you of what is about to take place. The child has been safely delivered, the placenta has come away in a short time, and while you are perhaps congratulating yourself on the happy termination of the labor the blood begins to trickle over the bed upon the floor, or the patient suddenly complains of great faintness. In such cases there may be either a want of uterine contraction, or the contractions may not be permanent, but be followed by relaxation and the effusion of a large quantity of blood, which may either appear externally, or remain to become coagulated, and distend the uterus. For several hours after delivery, in some cases, this alternate relaxation and contraction goes on, to the great hazard of the patient, and if her condition be not clearly ascertained, and the proper remedies be employed,

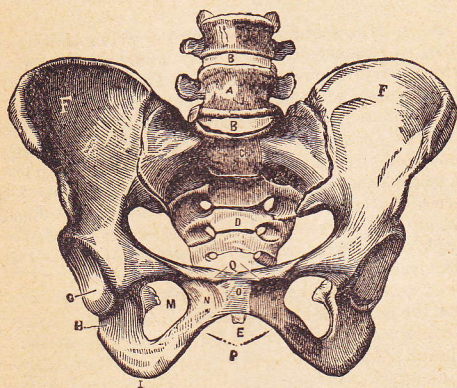
death may unexpectedly take place. By far the most important remedies in the cases of uterine hemorrhage are constant and powerful pressure over the fundus uteri, the application of cold around the pelvis, and the free administration of wine, brandy and other stimulants. The pressure and cold air are always within our reach however sudden the attack may be. The hypogastrium (lower part of the abdomen) should be strongly compressed with the binder, and a pad of folded napkins placed under it, and in addition the hand should be firmly applied over the fundus uteri. Cold can best be applied, at the same time, by plunging a large napkin in a pitcher of cold water, and dashing it suddenly against the external parts, the nates and thighs; and this should be repeated until the uterus contracts, and the violence of the hemorrhage is controlled.

"After attacks of uterine hemorrhage, the patient should not be raised from the horizontal position for several hours, and the strength should be supported by wine, beef tea, and light nourishment. Brandy in gruel sometimes agrees when wine is rejected. Where recovery is to take place after uterine hemorrhage, the pallor of the countenance, the disposition to syncope, the coldness of the extremities, the feeble state of the pulse, and uninterrupted respiration, pass gradually away. Where the case is to terminate fatally, the symptoms gradually assume a more alarming aspect, the countenance becomes pale and sunk, the respiration stertorous, and the pulse cannot be felt at the wrist. There is great restlessness, and before death one or more fits of convulsions occur. Where recovery takes place, in some women it is astonishing how little permanent inconvenience is felt from the

great loss of blood which they have sustained. In the course of ten days or a fortnight the effects have entirely disappeared; and this is the common result. In some women, a violent determination of blood takes place to the brain, marked by heat, strong pulsations of the carotid and temporal arteries, intolerance of light, and all the symptoms of inflammation of the brain or its membranes. A strong febrile attack is sometimes experienced, without an increased determination of blood to any particular organ. These affections of the brain and nervous system are aggravated by depletion. The patient should be kept in a cool, dark room, and mild cathartics, sedatives, and anti-spasmodics, occasionally given. Where there is much headache and throbbing, a few leeches should be applied to the temples, and a cold lotion to the scalp."

It may be proper here to refer to the fact that parturition is not always natural, and that delivery will sometimes have to be effected by artificial means. Cases of this class are, however, comparatively rare; and when they are encountered, nothing short of an extended knowledge of the many intricacies connected with artificial delivery, and the mechanical skill to use the means and appliances necessary, can be of much avail.

Fig. 15.



FEMALE PELVIS, FRONT VIEW.—A, last lumbar vertebra; B B, intervertebral ligaments, or plates of fibro-cartilage, connecting the bodies of the vertebrae; C, the sacrum, the letter being placed on the projection formed by the lowest lumbar vertebra and the upper point of the sacrum, called the *promontory* of the sacrum; D, transverse lines, indicating the original separation of the sacrum into five vertebral segments; E, end of the *os coccygis*; F, the ilium; G, the acetabulum; H, body of the ischium; I, tuberosity of the ischium; M, foramen magnum; N, body of the pubis; O, symphysis of the pubes; P, pubic arch; Q, upper part of the body of the pubis.

CHAPTER XII.

THE PELVIS.

A GENERAL acquaintance with the pelvis is desirable, as it constitutes the bony structure through which parturition is effected, and contains within it, or has in some manner directly connected with it, the different generative organs. It is, therefore, constantly referred to, and a general knowledge concerning it will lead to a better comprehension of many other parts. It is described as a circle formed by large and firm bones, and as standing like an arch between the lower extremities and the trunk. Its offices are said to be to give a steady bearing to the trunk, and to connect it with the lower extremities by a sure and firm joining; to form the centre of all the great motions of the body; to contain all the internal organs of generation, the urinary bladder, the rectum, and occasionally part of the intestines; and to give support to the pregnant womb. In the child, the pelvic bones consist of many pieces, but these subsequently become united or joined together, so that in the adult they are defined as consisting of three large bones and a smaller one. These are called the *os sacrum*, the *ossa innominata*, and the *os coccygis*.

The *SACRUM*, in children, is composed of five or six bones, united by cartilage, but in the adult it becomes one bone, in which, however, the marks of former separation are readily distinguishable, being indicated by four or five transverse lines of a color different from the rest of the bone. With its appendage, the *coccygis*, it has been called the *false spine*, or the *column* of the *false vertebrae*.

distinguishing it from the *true spine*, or the column of *true vertebrae* of the neck, back, and loins—the former lacking the motion which is possessed by and characterizes the latter.

The sacrum forms the posterior part of the pelvis, and has been described as resembling an irregular triangle in shape, or an inverted pyramid, flattened before and behind, with its base joining the last lumbar vertebra above. Below it joins the coccygis, and its sides are firmly united to the hip bones. Its outer surface is irregular and rough, while its inner is smooth and thus, in labor, permits the head of the child to slide easily along.

The sacrum of the female pelvis differs from that of the male in being usually shorter, broader, and more curved, by which means the cavity of the pelvis is enlarged. Its joining with the coccygis also presents the important difference of being movable in the female till about the forty-fifth year of her age, while in the male its movable power terminates at about the age of twenty. This is a provision of nature by which, in time of labor, the coccygis is felt to give way, thus enlarging the lower opening of the pelvis and rendering delivery less difficult.

The coccygis is a small appendage to the sacrum, to the lower point of which it is joined. It forms the lowest extremity of the backbone, and is known by the names of the crupper bone and rump bone. In children it is merely cartilage, and exhibits no point of bone: during youth it is ossifying into four distinct bones, which continue movable upon each other till manhood; then the separate bones gradually unite with each other, so as to form one conical bone, with bulgings and marks of the pieces of which it was composed; but still the last bone continues to

move upon the joint of the sacrum, till, subsequently, it becomes firmly united, later in women than in men, with the latter of whom it often becomes fixed at the age of twenty or twenty-five. The coccygis is turned in, or points forwards, and thus contracts the lower opening of the pelvis, so as to support effectually the rectum, bladder, and womb; and yet continues so movable in women as to recede in time of labor and thus allow the head of the child to pass. The prolongation of this appendage to the spine by a succession of additional bones, forms the tail in quadrupeds.

The *OSSA INNOMINATA*, *innominate* or *nameless bones* (frequently designated in the singular as the *os innominatum*), are the two great irregular bones, called the hip-bones. Together with the sacrum they constitute the pelvis. In the child, the hip-bones are in separate and distinct pieces, which subsequently become united into one great bone; but for convenience of description the division into parts is retained. These parts are called the *ilium*, the *ischium*, and the *pubis*, and are sometimes designated by their plurals, as the *ilii*, the *ischii*, and the *ossa pubis*, or *pubes*.

The *ILIUM* is a broad, thick plate, forming the upper part of the hip-bone. It is the largest part of the hip-bone, and has been called the haunch-bone, because it forms the rounding of that part of the body known as the haunch or flank. Externally, this bone is unequally prominent, and hollowed for the attachment of muscles; and internally, at its broadest fore part, it is smooth and concave. It is covered with the great muscles that move the thighs, and to its edge are fixed those broad, flat muscles which form the walls of the abdomen. It is connected at its side with the sacrum.

The **ISCHIUM** is the lowest of the three parts of the hip-bone. In form and shape it is very irregular, and it is usually divided into three parts, called the *body*, the *tuberosity*, and the *ramus*. The *body* of the ischium is the upper and thicker part of the bone, and joins the ilium. Below the body is the round knob or prominence, known as the *tuberosity* of the ischium, upon which we rest, and which is somewhat flattened at the immediate point which supports us when we sit. The tuberosity gives rise to several strong muscles on the back of the thigh, and especially to those which form the ham-strings. From the tuberosity a branch or arm—the *ramus*—arises and passes obliquely upwards and forwards to meet a like branch from the pubis. The *ramus* gives attachment to the crus of the penis.

The **PUBIS** is the smallest of the three bones, and is placed at the upper and fore part of the pelvis, where the two ossa pubis, or pubic bones, meet and are united to each other by means of a very strong cartilage, called the *pubic symphysis*.

Most of the bones of the pelvis are variously perforated with holes and cavities, some of which have, apparently, no specific use, and are therefore regarded as simply designed to diminish substance and weight. Most of these holes, however, serve for the transmission of muscles, nerves, and vessels, which extend to and ramify through other parts of the body. The outer surfaces of the bones, by their general unevenness and roughness, are peculiarly fitted for muscular attachments, and therefore the bones of the pelvis may be regarded as a centre from which numerous large and small muscles extend to other parts, some of which are of great power and strength.

From the foregoing it will be observed that the

ilium, the ischium, and the pubis, compose the os innominatum or hip-bone on each side. These three bones concur to form the cavity or socket, called the *acetabulum*, which receives, and into which is firmly fixed, the head of the thigh-bone. The ilium contributes a little less than two fifths, the ischium a little more than two-fifths, and the pubis about one-fifth, to the forming of the acetabulum.

The ischium and pubis contribute to form the oval-shaped cavity or hole, called the *foramen magnum*. It is conjectured that this opening serves to lighten the bones of the pelvis. It is, however, occupied or closed by a fibrous membrane.

On the inner surface of the ilium there is a considerable ridge which corresponds with a similar prominence on the sacrum and ischium, and these elevations, together with the upper part of the pubis, result in the production of a continued and prominent line, forming the *brim of the pelvis*. The brim describes an oval ring which parts the cavity of the abdomen from the cavity of the pelvis. It is also credited with supporting the impregnated womb, and with keeping it up against the pressure of labor pains. Sometimes it has been "as sharp as a paper-folder, and has cut across the segment of the womb;" and so, by separating the womb from the vagina, rendered delivery impossible: the child passing into the abdomen and the woman dying.

The pelvis is usually divided into two parts—the *upper* and *lower*: the former is wide and expanded—the latter more contracted.

The upper part is formed or enclosed by the ilia on each side, and completed by the lumbar vertebrae at the back, and by the soft walls of the abdomen in front. It is called the *superior pelvis*, and also the *great pelvis* and the *false pelvis*.

The lower part is formed or enclosed by the sacrum and coccygis behind, and the ischii and pubes in front. It is called the *inferior pelvis*, and also the *basin*, the *small pelvis*, and *lesser pelvis*. Its cavity is nearly cylindrical. The dimensions of this cavity greatly serve to distinguish the female pelvis from that of the male, as will be seen from the following comparisons :

CAVITY OF	FEMALE.	MALE.
INFERIOR PELVIS.		
Circumference.....	15 1-2 inches,	13 1-2 inches.
Diameter from front to back..	4 1-2 "	4 1-4 "
Transverse diameter.....	4 1-2 "	4 "
Depth, in front.....	1 1-2 "	1 3-4 "
" behind.....	5 "	5 1-4 "
" at sides.....	3 1-2 "	4 "

The inlet to this cavity is called the *superior strait*, the *brim* of the pelvis, or the *upper opening*. The superior strait is the passage by which the child passes from the upper part or superior pelvis to the lower part or inferior pelvis. This strait exhibits the following diameters and comparison :

SUPERIOR STRAIT.	FEMALE.	MALE.
Circumference.....	16 1-2 inches,	15 inches.
Diameter from front to back..	4 1-4 "	4 "
Transverse diameter.....	5 1-4 "	4 3-4 "
Oblique diameters, each.....	4 3-4 "	5 1-2 "

The outlet of the cavity is called the *inferior strait*, or *lower opening*. The inferior strait is the passage by which the child passes from the inferior pelvis and is born. This strait shows the following diameters and comparison :

INFERIOR STRAIT.	FEMALE.	MALE.
Diameter from front to back..	4 1-4 inches.	3 1-4 inches.
Transverse diameter.....	4 1-4 "	3 1-4 "

The oblique diameters are the same as in the supe-

rior strait, and the diameter from front to back is capable of being extended about one inch, during labor, in consequence of the mobility or bending back of the coccygis. Nearly all the diameters are a little increased during labor, which is due to the fact that, as the time of labor approaches, the *symphyses*, or fibro-cartilages by which the different bones are united, undergo a slight degree of softening or relaxation, and thus permit the bones to yield a little. It was formerly supposed that the bones actually separated, so as to enlarge the passage for the child, but this was simply an error. That they yield somewhat there can be no doubt, yet not to such an extent as to be very perceptible.

The soft parts below the pelvis, comprising the perineum and different muscles, are designated as the *floor of the pelvis*: this is distended by the pressure of the child, upon its descent to the outlet of the inferior pelvis, where its progress is temporarily delayed until the the passage through the vulva becomes sufficiently enlarged to admit of its final expulsion. Sometimes the outlet of the inferior pelvis is too wide, and thus permits the child's head to pass too suddenly, and with such violence, upon the floor, that the perineum is torn. This sudden pressure may also result in the pulling down of the womb, or in floodings, and instances are even given where the child was suddenly dropped from the womb.

In form, structure, and general appearance, the pelvis and its bones are essentially the same in the male and female, yet in each there are distinctive differences. Besides the differences already designated, it may be added that in the female the sacrum and coccygis are shorter and broader than in the male; the ili are more expanded; the bones

generally are thinner, exhibit fewer attachments of muscles, and, therefore, indicate a less degree of strength; the pelvis is broader, more expanded, though not as deep, but of greater capacity, and generally exhibits the adaptations required for the exercise of functions peculiar to the female, and for which it would be wholly unfitted if exactly modelled after that of the male. Thus the female pelvis, with its large cavity and slender bones, is called shallow, wide, and weak, while that of the male, with its smaller cavity and larger bones, is called narrow, deep, and strong.

From these differences it follows that, in the female, the centre of gravity does not fall so directly on the upper part of the thigh as in the male, which renders her step less firm, and causes her to throw her hips more forward, in walking. It is also supposed to be due to these differences that "the characteristic of the manly form is firmness and strength—the shoulders being broad, the haunches small, and the thighs in a direct line with the body, which gives a firm and graceful step; while the characteristic of the female is delicacy, softness, and bending—the shoulders being narrow, the haunches broad, the thighs round and large, while the knees approach each other and render the step unsure: so that the woman, even of the most beautiful form, walks with a delicacy and feebleness which we have come to acknowledge as a beauty in the weaker sex."

CHAPTER XIII.

DISEASES AND REMEDIES.

In treating of the diseases incident to the generative organs, the principal object has been to give such a description as would enable any one to form some idea of their appearances, characteristics, and effects, and so become qualified to estimate the probabilities of the specific disease existing in any given case. It is often of the utmost importance that the incipient stage of disease should be promptly arrested, and many diseases are of such a nature that unless this be done, they will rapidly advance to a point when a cure becomes extremely difficult and very frequently almost, if not entirely, impossible. It may be stated, as a general rule, that all diseases, of whatever type, are more readily managed if attended to in their incipient stages, while most of them can then be at once arrested and speedily cured. It becomes, therefore, a matter of the greatest importance that all should have at least a limited knowledge concerning the diseases of which they may, at any time, and in most cases without any fault on their part, become the victims.

From the description given of each distinctive disease the reader will be enabled to comprehend how it commences, progresses, and terminates, and also obtain an idea of the appearances, signs, marks, or characteristics peculiar to it. This knowledge will enable him to some extent to *diagnose* diseases—that is, he will be enabled to distinguish one disease from another, and to determine, from the distinctive marks or characteristics peculiar to each,

what it is, and to give it its appropriate name. To become familiar with all the minute details, changes, variations, and peculiar manifestations of diseases, requires long and careful study and observation under circumstances affording proper facilities for both. These facilities only fall within the reach of the professional man. This knowledge of minutia is, however, not intended for those outside of the profession, neither would it be of much practical value or use to any one engaged in other pursuits. All that is needed is that general knowledge which will qualify every one to judge of diseases so far as may be necessary to apply or to have applied the proper remedies.

In the effective use of remedies for diseases a peculiar faculty of judgment is required. The same remedy used under one man's direction will prove an absolute failure, while under another's it will result in complete success. Remedies should produce specific effects, or the like effects upon all systems, the exceptions, if any, being due to purely accidental causes; yet the same remedy applied by one man will produce little or no effect, and when applied by another will fulfill every expectation. It is not so often the remedy itself that is to blame for failure as the want of judgment in its administration. This peculiar judgment is to a large extent a natural faculty or gift, yet its development requires the facilities which are only afforded by practice.

It is, therefore, not to be expected that diseases can be managed, remedies applied, and cures effected, upon the limited knowledge which the perusal of a small volume will afford; but it may reasonably be expected that such knowledge can be afforded as will enable any one to know when aid

should be sought for, and also to judge whether such aid, when procured, is proper or worth having. This knowledge is of the most essential value in the present condition of our society and our institutions. While many ignorant and incompetent men are annually turned loose upon society by our medical schools to experiment, torture, and kill or butcher, those who may be so unfortunate as to fall into their hands, these schools are also annually sending forth many worthy, honorable, and competent practitioners. The great desire is that each should have within himself that degree of knowledge necessary to distinguish the former from the latter, and without this knowledge the most lamentable mistakes are sure to be made. This is especially the case in our larger cities, and more especially still is it the case with persons who, from a distance, apply to these cities for aid. Take for example the City of New York: it may truly be said that the profession there numbers among its members both talent and skill equal to any in the world, and yet how few, when in search of that very talent and skill, succeed in securing them! The unbounded audacity of the arrogant and ignorant pretender always stands prominently forth, too often overshadowing the genuine merit which, disgusted with the general ignorance, remains within its more congenial spheres. Thus the former reaps a rich reward from the general public, who receive in return the limited benefits which brazen assurance always gives; and thus, too, from the licensed quack spring forth a multitude of unlicensed ones to prey upon the prevalent ignorance. No matter how manifest their absolute stupidity may be, an ignorance far beyond theirs is found in such prolific abundance that an almost

unlimited field is spread before them in which they may pursue their operations.

For these evils there is but one remedy, and that consists in individual information : not that impossible information which would make every one fully acquainted with the minutest structure of the body, the innumerable ills to which it is the unfortunate heir, and the almost unlimited number of remedies by which these ills may be effectually encountered ; but a knowledge sufficiently extended to qualify each individual to secure the full benefits of the scientific skill possessed by the age in which he lives, and which is always to be commanded by those who can distinguish it.

CHAPTER XIV.

DISEASES OF THE MALE GENERATIVE ORGANS.

THE diseases peculiar to the generative organs of the male are even more complicated than numerous, and in most cases the attention and treatment, in order to be efficient, should commence in their incipient stages.

HYDROCELE.

This term is properly applicable to all tumors produced by water, but has been generally confined to those which are peculiar to the membranes of the scrotum, or to the coats of the testes and their vessels. It is commonly, though incorrectly, known as *dropsy of the testicles*, and is also often called a *swelled* or *watery* testicle. The affection is not in the testis itself, but in the membranes of the scro-

tum, or the coats of the testis and its vessels. Hydrocele is distinguished into three kinds, the first affecting the membranes of the scrotum, the second the coat of the testis known as the tunica vaginalis, and the third the spermatic cord.

First: When hydrocele has its seat in the membranes of the scrotum, it is common to, or extends over, the entire scrotum and all the cellular substance which loosely invests both the testes. This variety of hydrocele is not strictly regarded as a disease peculiar to the scrotum, because it very rarely affects the scrotum only ; but is rather looked upon as being a symptom of a disease in which the whole habit is most frequently more or less concerned. It is usually the attendant of the disease affecting the general system known as *dropsy*, and more especially accompanies dropsy of the abdomen. It is, however, said to be sometimes produced by wearing a truss imperfectly arranged or improperly made, by wearing clothing which fit too tightly and thus occasion pressure of the scrotum and testes, and also by blows upon these parts. In hydrocele of the scrotal membranes, an impression made by the finger upon the part affected, will be retained for some time and present a white appearance, and as the disease advances the scrotum will become hard, the skin smooth, the penis enlarged, its prepuce expanded, and sometimes the skin will inflame and slough, or separate and come off.

Remedies and Treatment.—When hydrocele results from general dropsy it can only be removed by removing its cause, to effect which will generally baffle the skill of the best physician, and too frequently will be found impossible. It may, therefore, be considered useless to give any remedies here, none being known as being in itself

specifically and effectually applicable. All pressure, however, should be removed from the parts, they should be frequently bathed with cold water, or with a solution of alum made by adding to a pint of water about one ounce of alum, and the supporter known as the suspensory bandage should be constantly worn. Fluids should be as little used as possible, and the bowels should be kept open.

Second: When hydrocele is seated in the coats investing the testis and its vessels, it is usually called *hydrocele tunica vaginalis*. It is then a local disease, very rarely affects the common membrane of the scrotum, generally attacks one side only, and is frequently found in persons who are free from all other diseases. This disease is described as "a morbid accumulation of the water, separated on the internal surface of the tunica vaginalis, to moisten or lubricate the testis." From its first appearance, it seldom disappears or diminishes, but generally continues to increase, sometimes rapidly, at others more slowly. The swelling is generally first perceived at the lower part of the scrotum, on one side only, from which point it gradually progresses upwards. Sometimes the affection may be on both sides, so that the two sides of the scrotum will exhibit the swelling, but even then each side will be found so distinct from the other that this disease can readily be distinguished from others. In some cases the swelling grows to a painful degree of distention in a few months: in others it continues many years with little disturbance. It frequently rises up from the bottom of the scrotum as high as the abdomen, and in certain stages the tumor formed by it will resemble, and has been compared to, an egg or pear. At first the tumor may be felt to be quite soft and fluctuating

or undulating—that is, the water can be felt to move or shift its place when the tumor is pressed by the finger. As it enlarges it becomes more tense, ceases to be undulating, assumes a more oblong shape, and is sometimes transparent; so that if a candle be held on the opposite side, a degree of light is perceived through the whole tumor. Its undulating characteristic is, however, its most distinguishing feature, and by this mark it can always be recognized from other diseases which could possibly be mistaken for it. Cases have been known in which the quantity of water accumulated was very remarkable. From the great historian, GIBBON, *six quarts* were removed. When the accumulation of the water becomes much enlarged, the penis is drawn up, appears diminished in size, and its erection is attended by great pain; while the spermatic cord is drawn downwards, and also becomes more susceptible to pain. In most cases, however, but little suffering attends this disease, the inconveniences experienced mostly resulting from the enlargement and weight of the parts. From the fact that it is not attended by any suffering or unpleasant sensations in the beginning, its commencement generally remains unnoticed, and its existence is only discovered after it has made some degree of progress. Among the causes assigned as producing it are, a peculiarity in the constitution of the patient having a tendency that way; blows, or injuries to the testis; pressure from riding on horse-back with hard and badly designed saddles; and improperly constructed trusses.

Remedies and Treatment.—Pursue the same course previously recommended for hydrocele of the scrotal membrane. If this does not reduce the

swelling, the lotion made as follows has been highly recommended :

Add one ounce of powdered Peruvian bark to one pint of boiling water, and boil for ten minutes. When cold, add half a pint of spirits of camphor. Use as a lotion, and apply it for about ten minutes every night after removing the suspensory bandage, and for about the same time every morning before putting on the bandage.

A lotion made as follows has also been found useful :

Sugar of lead, one ounce; laudanum, one drachm, or a teaspoonful; water, one pint. Use as a lotion, and apply night and morning.

In cases of this kind, however, it often becomes necessary to have recourse to the surgeon, and submit to the performance of an operation. This is generally of a very simple character, although requiring some skill and great care on the part of the operator. It consists in puncturing the scrotum, and thus providing an escape for the water, and is sometimes followed by an injection, through the puncture thus made, of some astringent fluid.

Third: Hydrocele of the spermatic cord may manifest itself in two different ways, the *first* of which corresponds with the hydrocele affecting the membranes of the scrotum, the only difference between the two being that of location. It is very rare, and is supposed to be caused by the same influences that produce hydrocele of the scrotum. When it is not connected with dropsy in other parts, it is attended with a colorless tumor in the course of the spermatic cord, is soft and inelastic to the touch, and does not fluctuate. In an erect position of the body it is of an oblong figure, while in a recumbent position it is flatter and somewhat round. Generally it is no longer than the part of the cord which lies in the groin, though sometimes it extends

as far as the testis, and even stretches the scrotum to an uncommon size. By pressure a great part of the swelling can always be made to recede into the abdomen; but it instantly returns to its former situation upon the pressure being withdrawn.

Remedies and Treatment.—When the disease is occasioned by dropsy in other parts, the latter must be removed before a cure can be effected. Astringent lotions are the means employed in this disease, and the bandage is regularly worn. Relief can also be afforded by the performance of an operation which will permit the water to escape, but this is always attended by some danger.

The *second* way in which hydrocele may affect the spermatic cord is known as *hydrocele cystata*, or *encysted hydrocele of the spermatic cord*. The term encysted is applied to tumors which consist of a fluid or other matter enclosed in a sac or cyst. Of these sacs there may be one or more occupying different places of the cord. The sac or tumor is usually somewhat egg shaped, and may be felt below or behind the testis, or in that part of the cord between the testis and the groin. When existing immediately at the testis it does not envelope it but is distinct from it, so that both the tumor and the testis can be readily felt, while in hydrocele of the tunica vaginalis, when large, the testis cannot be discovered. The tumor is firm, with but little perceptible fluctuation when pressed, and when near the ring may be pressed into the abdomen, from which it returns to its former position, however, as soon as the pressure is withdrawn.

Remedies and Treatment.—Use the lotions previously recommended, night and morning, and keep the bowels open. In this way the disease may be kept from growing worse, if not cured. If an oper-

ation becomes necessary it should be skillfully performed, and only submitted to if unavoidable. In such operations the sac is punctured in certain cases and the water let out, in others the tumor is cut out entirely, and in others it is simply lanced and a seton inserted. This disease is often manifested in children, for whom the following lotion has been found very beneficial in dispersing the water :

Take of hydrochlorate of ammonia, one ounce ; of distilled vinegar, four ounces ; and of water, six ounces. Mix, and apply as a lotion two or three times a day. Adults will also find a lotion made of the same proportions of hydrochlorate of ammonia and distilled vinegar, and three ounces of water, very useful.

INFLAMMATION OF THE TESTIS.

This disease is called *orchitis*, and also *hernia humoralis*. Inflammation of the testes, in its commencement, is usually accompanied by slight soreness, pain, and swelling. The first appearance of the swelling is generally a soft and pulpy fullness of the body of the testis, which is tender to the touch ; this increases to a hard swelling accompanied with considerable heat and pain. The epididymis, towards the lower end of the testis, is generally the hardest part, but the swelling often pervades over its whole extent. The spermatic cord, and especially the vas deferens, are often thickened and become sore to the touch. The spermatic veins sometimes become varicose. The scrotum, in consequence of the swelling, becomes smooth and red, and often extremely sensitive to the touch. Occasionally very severe pains are felt in the loins and limbs, with a sense of weakness in them and in the pelvis. Colicky pains, uneasiness in the stomach and bowels, flatulency, sickness and even vomiting, are also frequently experienced.

Pains, however, do not always attend it, not even in every severe case. The epididymis is the part first attacked, and sometimes it remains confined to this part, but usually the whole testis is swelled.

The causes which produce this disease may be constitutional, and it may arise very slowly ; it may also arise from blows, strains, or other injuries received by the parts ; the affection known as the *mumps*, which is not exclusively confined to children as is sometimes supposed, may likewise produce it ; but it is most frequently a symptom attending gonorrhea, generally following a sudden check of the discharge in that disease. In such cases, however, it is sympathetic, not venereal, and is generally the result of irritation of the urethra occasioned by the use of injections. It is apt to follow from every kind of irritation of the urethra, whether produced by stricture, injections, or bougies. When thus occasioned, the swelling and inflammation generally appear suddenly, and frequently assuddenly disappear, or go from one testis to the other. The epididymis remains swelled, however, even for a considerable time afterwards.

The dangers attending inflammation of the testes are the possibility of its being followed by hydrocele, the effects of which have been described ; by abscesses, which will result in a wasting away of the testes ; or by the partial or total loss of sexual power. This last is the result of injuries occasioned, by the disease, to the delicate structure of the testes, in consequence of which they lose their powers of secreting the semen, or by such an injury to the vas deferens as will preclude the passage of the seminal fluid through it. There is also danger of subsequent attacks of inflammation after the testes have been once attacked in this way, and therefore

the greatest care should be observed to guard against them, there being a strong probability that each succeeding attack will exceed the preceding ones in severity.

Cases occur in which inflammation of the testes becomes chronic, very much resembling rheumatism in the manner in which it comes and goes at uncertain intervals—generally after exposure, or after changes in the weather. In fact, when it assumes this form it is often called *rheumatism of the testis*, and treated in the same manner as that disease is treated when affecting other parts of the body.

Remedies and Treatment.—Perfect rest is first enjoined, the patient lying upon his back and the suspensory bandage or a truss being employed to support the scrotum; all stimulating food or drinks, and all mental or emotional excitements, must be avoided; the bowels must be freely opened and then kept open by mild cathartics; and cold lotions must be abundantly applied. A lotion made as follows is much in use:

Take of alcohol, half a pint; water, half a pint; and of laudanum, one large spoonful. Mix, and apply frequently. It should be used cold, but when the patient suffers much the pain may be alleviated by applying it very warm, or by using ordinary poultices, made of bread or linseed, applied warm.

To procure relief from suffering, however, it sometimes becomes necessary to apply leeches to, or extract blood from, the scrotum, and even to administer anodynes internally. After the inflammation has subsided, any tendency to induration or hardening of the testes should be promptly checked, lest it becomes permanent. For this purpose frequent poulticing and bathing with hot water may

be sufficient; if not, the *camphorated mercurial ointment* may be used by rubbing it upon the parts.

Sometimes infants are affected by inflammation of the testes, even shortly after birth, but in such cases ordinary fomentations or lotions will generally prove effective. In children it also results from the mumps, to which they are more particularly subject than adults, but it generally disappears with the disappearance of its cause. The mumps is a swelling on the cheek and under jaw, extending over the neck, from inflammation of the parotid and other salivary glands, rendering swallowing, or even breathing, sometimes difficult. It usually declines on the fourth day. It is also regarded as being epidemic and contagious. It is subject to be translated or shifted from its original seat to the *mammæ*, in females, and to the testes, in males; and in some instances, repelled from these parts, it has affected the brain, and proved fatal. When it affects the testes the bowels should be kept open, and the patient confined to unstimulating food. Hot fomentations should be freely used, and these will generally be found sufficient. Cold applications are not recommended, because they have a tendency to drive the disease to the brain; and, therefore, when lotions are employed they should be used at a temperature neither too warm nor too cold.

SARCOCELE, OR SWELLED TESTIS.

This is a disease of the body or substance of the testis, and consists, in general, in such an alteration in its structure as produces a resemblance to a hard, fleshy substance, instead of that fine, soft, vascular texture, of which it is, in a healthy state, composed. This disease is also called *hernia carnea*.

and is distinguished into so many kinds that it is said "there is hardly any disease affecting the human body, which is subject to more variety than this is, both with regard to its first manner of appearance, and the changes which it may undergo." Every kind of sarcocele, however, consists primarily in an enlargement, induration or hardening, and obstruction of the vascular part of the testis. Sometimes the substance of the testis simply becomes enlarged and hardens, but has a perfectly smooth and even surface, is free from pain, or not very nor frequently painful, has no appearance of fluid in its tunica vaginalis, produces no inconvenience except such as may be occasioned by its own weight, and remains in this condition for a long time, or the disease may even disappear entirely. At other times, after the appearance of the disease in a mild form, the testis suddenly becomes unequal, or knotty, and acute pains dart up to the loins and back. Then, again, the disease will make its way through all the membranes that envelop the testis, and either produce a large, foul, stinking, and rapidly spreading ulcer, with hard edges, or break forth in a painful, oozing ulcer, subject to frequent hemorrhage. Sometimes the testis enlarges and hardens, and at the same time there may be a very perceptible accumulation of fluid in the tunica vaginalis; while at others there is no fluid at all in this coat, but the body of the testis itself is formed into cells containing a turbid kind of water or fetid matter. In some instances the disease is merely local or confined to the testis, the patient having otherwise a healthful appearance, while at others the countenance appears leaden or pallid, the stomach becomes affected with indigestion and nausea, colicky pains are felt, and sudden purgings

take place. It also remains fixed in the testis sometimes, or will exist there for a considerable period before advancing upwards, and in other cases it will very speedily and totally spoil the testis, and then seize upon and almost as speedily ruin the spermatic cord.

The causes which tend to produce the various kinds of sarcocele, or swelled testis, are not defined nor comprehended, and, therefore, they are supposed to be due to a peculiar or predisposing constitutional habit. Cancerous and scrofulous affections often produce it, but then it also occurs where these affections cannot be traced. Some of its milder forms are regarded as resulting from external injuries to the parts; but however it may be produced, it is a most dangerous disease, and can only be checked, if at all, by prompt attention to the first stages of its existence. These, unfortunately, are too often neglected, so that its final result most frequently proves fatal.

Remedies and Treatment.—In the first stages of the disease efforts may be made to disperse the swelling by the application of leeches, lotions, and mercurial ointment. Internally, preparations of mercury and iodine have been found useful. Where the swelling is of the simpler kind, proper efforts made in the beginning may arrest its progress and result in a cure, but where such efforts fail to make a speedy impression upon it, the only course left is to remove the testis affected. This should be resorted to at a stage of the disease sufficiently early to be of use. If too long delayed, it may extend to other parts and prove fatal in spite of every effort—a result which, unfortunately, too often attends it.

SPERMATOCLE.

This disease is a swelling of the testis or epididymis

resulting from an accumulation of semen, and is not of very frequent occurrence. The swelling of the testis is accompanied by a sensation of fullness, by aching pain extending to the loins, but the heat which attends it does not partake of the nature of an inflammation. Falling or twisting of the spermatic cord, derangements of the vas deferens which obstruct the passage of the semen, swellings of the prostate gland resulting in pressure upon the ejaculatory ducts, and obstructions of the urethra, are assigned as causes producing spermatocele. Some authors have also supposed that it may result from continued continence, but of this there is no authentic proof, and there seems to be but little reason for the supposition. It is most likely an error. Of the consequences enumerated as sometimes resulting from the continuance of the disease, hydrocele, inflammation of the testes, injuries to the seminiferous tubes and vas deferens, and impotence are the most prominent.

Remedies and Treatment.—Simple and unstimulating diet and cold water as a drink should be the regimen observed, healthful exercise should be daily and persistently taken, and all mental excitements tending to augment the disease avoided. The regular pursuit of some active occupation or employment, affording sufficient exercise for the mind and body, will prove effectively beneficial. When the disease results from any special or serious obstruction this must be removed, after which mild purgatives, cold lotions, and sometimes leeches or bleeding may be employed.

NEURALGIA OF THE TESTIS.

From neuralgia, so common to other parts of the body, the testes are not exempt, although they are not very frequently affected by it. It is pecu-

liarily a nervous affection, and is sometimes very difficult to cure, although a cure may nearly always be effected. It manifests itself principally by a tenacious pain, which usually comes on periodically, and each time it returns continues for a longer or shorter period. The intervals of time between its returns or renewals may be short or long—may consist of an hour or of days; and a similar variation may mark the time of its duration—sometimes continuing but for minutes and at others for days. The pain, also, may be more or less acute, being sometimes attended by nausea of the stomach and vomiting, cold perspirations, often causing the sufferer to give vent to shrieks or groans, and even producing fits of fainting. This pain frequently so affects the cremaster muscle that the testes are closely drawn up to the groin. No marked effects or traces, however, are produced upon the testes, and when examined they usually appear in a natural condition of health, except when the disease has been of long continuance or very severe, in which case swelling and inflammation have been observed.

Remedies and Treatment.—As the disease may be caused by affections in other parts of the body, these should be ascertained and removed. Medicines taken internally must be regulated by the condition of the patient. The external applications employed are ice water and cold lotions in some cases; warm fomentations in others. Blisters, plasters, and ointments, made of various ingredients, are also often used. Steaming the parts affected generally produces immediate relief. As a means of benumbing the parts, the tincture of aconite is sometimes applied to the scrotum with a sponge. Cases have also been known so confirmed, producing such severity of suffering, and so serious;

affecting the health of the individual, that the removal of the testis was resorted to. If properly and skillfully managed however, these neuralgic affections can generally be speedily removed.

IRRITATION OF THE TESTIS.

A peculiar irritable sensation, which cannot be designated as painful, although pain may occasionally be experienced, sometimes attacks one or both of the testes, and becomes a source of great and constant annoyance. The organ becomes so singularly sensitive that even the ordinary contact of the clothes worn is attended by an inconvenience almost amounting to absolute suffering. The affection is usually confined to the testis, but sometimes it extends up the spermatic cord, and thus complicates the source of annoyance. Its effects are generally more productive of evil in consequence of the impressions made upon the mind than otherwise hurtful; and as it usually remains, unless the proper means are taken to remove it, for a considerable period of time, these mental impressions, principally consisting of indefinite fears and apprehensions, of themselves become a source of torture. The disease is attributed to constitutional causes, to dyspepsia, and to habits or practices calculated to derange the genital organs.

Remedies and Treatment—The causes by which the disease is occasioned must first be ascertained, and by the removal of these a cure will speedily follow. If they are of a constitutional or nervous character, they must be removed by the remedies indicated by each individual case; and if they result from any special habit or practice, this must be abandoned. Repeatedly bathing the parts with cold water will often be found an efficient remedy.

The use of the suspensory bandage will generally be found serviceable, and in some of the more obstinate cases the belladonna ointment applied to the scrotum will prove very beneficial.

OSSIFICATION.

Rare cases have occurred in which a change was produced in the testes by which they were ossified, or converted into a species of bone. How this was caused or effected, remains unknown. Of the process and progress of ossification we simply know that it apparently commences at a specific point and may sometimes be felt as a hard spot on the body of the testis, and then gradually advances until the whole organ is converted into a similar condition of hardness. No means of arresting or curing the disease are known, but in all cases where any hard substance is first felt upon the body of the testis, warm fomentations are recommended to be speedily applied.

WASTING AWAY OF THE TESTIS.

The different diseases to which the testes are subject often give rise to what is called a *wasting* of these organs. The same result is, however, also produced by other causes, and of those regarded as capable or likely to produce it, may be enumerated frequent and moderate pressure, or bruises and suddenly severe pressure, of the testes; diseases of a nervous type affecting parts of the body contiguous to the genital organs, and especially paralysis; certain injuries to the spine; any obstruction to the free circulation or supply of blood to the testes, occasioned either by the smallness and inefficiency of, or by injuries to, the spermatic arteries; excessive indulgence in venery; masturbation; continued mental anxiety; severe wounds to

plaint is sometimes found in old men, in which the scrotum assumes a brown color, and often becomes also thick, scaly, and wrinkled. The itching extends to the skin covering the penis, more especially along the course of the urethra; and has little respite, either by day or night.

Remedies and Treatment.—The probabilities are that this complaint is often the result of uncleanness, and therefore an appropriate remedy will be found in soap and water, and an excellent treatment in their application to the parts affected. If these are used as preventives, many cases of the complaint will certainly be avoided, although some forms of it may not be absolutely prevented. When the disease is established, resort may be had to cooling lotions and repeated washings with warm water and soap. The application of sulphur or citrine ointment, or of some of the preparations of mercury, has often proved beneficial. A wash made as follows is nearly always applicable:

Take of carbolic acid (liquid form), one drachm, or a teaspoonful; of cold water, one pint. Or, one part of acid and one hundred parts of water. Mix, and use freely as a wash or lotion. If too weak, take one part of acid to sixty parts of water. If made of proper strength or weakness, this wash will be found very serviceable, and it is likewise applicable in almost all affections of the skin.

The condition of the stomach and bowels must determine the propriety of using internal remedies. When indigestion exists it should be removed by the proper remedies, and when costiveness or habitual constipation accompanies the complaint, cathartics, laxatives, and alteratives should be employed. The diet should be of a simple and nourishing, but not of a stimulating kind; the clothing

around the parts should not be too warm, nor so tight as to cause chafing; and all rubbing or irritation of the affected parts should be carefully avoided.

ELEPHANTIASIS.

This is the name given to a peculiar affection which attacks different parts of the body, but principally the legs. In consequence of the skin becoming thick, rough, and scaly, and of the affected parts growing to such a monstrous size, nothing short of the elephant was deemed fit to supply a means of comparison, and hence its name. It seems to be mainly confined to certain sections of the world, being most frequently met with in the East and West Indies, in Africa, Egypt, and Greece. The disease sometimes becomes fixed in the scrotum, resulting in a tumor which grows to an incredible size, hanging down even as low as the ankles. Cases are reported in which such tumors, after they had been cut out, were found to exceed forty, fifty, and sixty pounds in weight, and it is even said that they have been known to grow to the weight of one and two hundred pounds. But few cases have occurred in the United States, although several, confined to black men, have been operated upon, in which the tumors weighed over fifty and sixty pounds. It is regarded as being simply a local affection, the general health of the body being not frequently affected by it, and the only remedy consists in the removal of the tumor by a surgical operation.

HÆMATOCELE.

This is a swelling of the scrotum, or spermatic cord, proceeding from or caused by blood, and is of very rare occurrence. In some cases the blood is

confined within the tunica vaginalis: these cases generally result from a surgical operation for hydrocele in which, in making the puncture to let out the water, a blood vessel sufficiently large happens to be wounded, and the blood flowing from it produces the hæmatocele. In other cases the blood proceeds from the vessels of the glandular part of the testis, and is contained within the tunica albuginea. In others, still, the blood is contained within the common cellular membrane investing the spermatic vessels, and proceeds from a rupture of a branch of the spermatic vein. Blows, sprains, or other causes and injuries producing an effusion of blood, are also capable of occasioning hæmatocele.

Remedies and Treatment.—Rest and quiet for a short time, with the application of fomentations of hops, the use of mild laxatives, and the support of the scrotum by a bandage, will generally be sufficient. If accompanied by inflammation, cold lotions, leeches, or the applications commonly used for its reduction, should be employed. If the accumulation of blood enlarges the scrotum too much, the latter must be punctured to permit of the escape of the fluid. When the source from which the blood proceeds can be ascertained, its flow can usually be at once arrested by compression.

VARICOCELE.

This is an affection of the veins of the spermatic cord, or of those of the scrotum, and is therefore also called a *swelling of the veins* of these parts. When it affects the former it is distinguished as *varicocele of the spermatic cord*, or more commonly as *circoele*: when it attacks the latter it is designated as *scrotal varicocele*.

Circoele is defined as a morbid or varicose distention and enlargement of the spermatic veins. The causes producing it are said to be hard running, jumping, lifting, pressure from riding or from wearing improperly made trusses. Disturbation, excessive indulgence, and disease peculiar to the genital organs. The appearance of the spermatic cord, in this disease, has been compared to a collection of earthworms, because the hard vermiform vessels may be felt in the course of the cord, and especially at the side of the testis. It is most frequently confined to that part of the cord which is below the opening in the abdominal tendon, and the vessels generally become rather larger as they approach the testes, on one side of which they appear, when felt, like a firm, knotty tumor, or like a roll of knotted cords. The swelling enlarges by coughing or straining and subsides by lying down, or by applying cold water to the scrotum. It is also usually not as great in the morning as in the evening. The disease gives rise to a sensation of weight in the parts, a feeling of uneasiness, as it is called, and sometimes a kind of pain may be felt in the back or loins, and weakness experienced in the thighs. This pain generally passes away upon suspending the scrotum with the suspensory bandage. The most serious effect attending this disease is the wasting of the testes which now and then follows. Circoele is sometimes mistaken for omental hernia, or rupture of the omentum into the scrotum, but can readily be distinguished by the following process: let the patient lie down, then gradually press the swelling into the abdomen, and then place the fingers firmly upon the upper part of the abdominal ring, and desire the patient to rise—if the disease be a hernia or rupture the swelling or tumor

cannot reappear so long as the pressure is continued at the ring, but if it be a circocele the swelling returns almost immediately.

Scrotal varicocele manifests itself by the appearance of livid and tumid veins, or swelling of the veins, on the scrotum. It mostly arises from debilitating diseases, excessive walking, running, jumping, wearing of trusses, and the like, producing at first a slight uneasiness in the part, which, if not remedied, continues advancing towards the loins.

Remedies and Treatment.—In scrotal varicocele there is generally not much required beyond rest, the use of cold astringent lotions, and the wearing of the suspensory bandage. In varicocele of the spermatic cord, or circocele, the same remedies are applied, and if the suspensory bandage be used in time, lotions and purgatives generally prove very efficient. The wearing of the bandage alone will often totally arrest its progress in its incipient stages. If the disease be permitted to proceed unchecked it becomes difficult to cure, and the wasting of the testes is an almost certain result. Some severe cases have been treated by cutting away a piece of the scrotum and drawing the parts together, thus rendering it smaller and causing it to press the testes closer to the abdomen. This operation, however, has not much to recommend it. Another operation is sometimes resorted to, which consists in severing the veins, or tying them, or removing a part of them; but this destroys the testis and is, therefore, almost wholly impracticable.

FALLING OF THE SPERMATIC CORD.

The nature of this affection is fully indicated by its title, and consists of such a relaxation of the cord in its attachments that it descends into the

scrotum. This relaxation may be caused by straining, by standing long upon the feet, by long continued fatiguing exertion, by masturbation, and by sexual excesses, and when it exists any of these causes will serve to increase it and make it worse. It may also be produced by general debility and by some of the diseases incident to the genital organs. It is manifested in the scrotum by a sensation of heaviness, by an uneasy feeling in the testis, and by dull pains extending to the groin. The cord may be felt by the fingers either immediately on the top of one or both testes, where it seems to lie in an irregular heap or tumor, or it may be felt extending down the inner side of one or of both the testes. This is especially the case in the evening, at which time it is more prominent than in the morning. When lying down it recedes partly or totally into the abdomen, into which it may also be pressed at any time by the fingers by working it up gradually. The effects that may be produced by this affection, unless remedied, are hydrocele, or inflammation, or the cord may grow to some part or organ and become so permanently attached that its adhesion cannot be severed. The pressure upon the testis may also provoke other complications.

Remedies and Treatment.—The most essential appliance in the treatment of this affection is the suspensory bandage,* which should be regularly and daily worn. Any of the causes known as producing it must be avoided or abandoned. Care should be taken not to have the parts too warmly clad. If constipation exists, it should be remedied

* NOTE.—In the use of the suspensory bandage it is a rule, to be always observed, not to remove the bandage before having retired to bed, and to put it on again before rising from bed in the morning.

by the use of food calculated to maintain a proper condition of the bowels. These things being attended to, nothing more will probably be needed beyond the persistent and continued application, at least twice a day, night and morning, and as often during the daytime as may be convenient, of cold astringent washes to the scrotum, perineum, and groins.

AFFECTIONS OF THE VASA DEFERENTIA.

These small tubes are subject to certain affections by which the proper performance of their functions is impeded or arrested. It sometimes happens that they become partially or entirely closed or obstructed, which interferes with or totally arrests the passage of the seminal fluid from the testes. This obstruction may be produced by inflammation, by blows over the groin, or it may be the result of other diseases in consequence of the inflammation occasioned by them extending to the tubes. This is very apt to be the case with diseases seriously affecting the testes. Pressure of any kind upon the spermatic cord may also produce temporary obstruction, and this is sometimes the case where trusses are improperly made or adjusted. Where the tubes are totally obstructed, sterility is a necessary result, and it is also apt to be the indirect cause of spermatocele, or of inflammation of the testes, in consequence of there being no means of escape for the accumulating seminal fluid secreted by these organs.

Relaxation and an enlargement of the tubes may also take place from different causes, tumors may grow in them, and they are likewise subject to some other affections, all of which largely interfere with or prevent the performance of their functions.

Remedies and Treatment.—The difficulties in which the vasa deferentia may become involved, will always be incomprehensible to the inexperienced, and often obscure to even the skillful practitioner. Successful treatment, therefore, sometimes becomes difficult, and all that can be done, outside of the surgeon, is the application of simple remedies. Where the difficulty arises from pressure, this must be removed; where it is simply due to inflammation, this must be reduced in the ordinary ways; where the tubes are relaxed, astringent lotions must be resorted to; and in all cases the causes which are supposed to occasion the difficulty must be carefully avoided.

PHYMOSIS.

Sometimes the prepuce extends over the glans penis and is so much contracted or straightened at its extremity that it cannot be moved back. This is called *phymosis*, and always gives rise to more or less annoyance, and generally produces disease and suffering. In children the prepuce is naturally very long, and also apt to contract at its extremity, which often occasions a lodgment of a small quantity of urine between it and the glans, and this, growing corrosive, produces irritation and inflammation: the result is, a still further contraction, confining the urine still more, and then the whole inside of the prepuce excoriates and suppurates, while its end grows thick and swells, and finally becomes callous, or so straight and contracted that even a probe is introduced with difficulty. In the like manner grown persons may be affected by a phymosis, but more frequently the difficulties arise from other causes, which are thus defined: "The sebaceous glands, situated in the

prepuce, round the corona, secrete an unctuous humor, which sometimes becomes acrimonious, irritates the skin that covers the glans, and the irritation extending to the internal membrane of the prepuce, they both become inflamed, and matter is generated, which cannot be discharged, because the glans is swelled, and the orifice of the prepuce contracted. We find also some grown persons who, though they never uncovered the glans, have been subject to phymosis from a venereal cause. In some, it is owing to gonorrhea, where the matter lodged between the prepuce and the glans occasioned the same excoriations as the discharge from the sebaceous glands. In others, it proceeds from venereal chancres on the prepuce, the glans, or the frænum; which producing an inflammation either on the prepuce or glans, or both, the extremity of the foreskin contracts, and prevents the discharge of the matter. The parts, in a very little time, are greatly tumefied; and sometimes a gangrene comes on in less than two days."

Remedies and Treatment.—In most cases of phymosis the difficulty can very readily be remedied by the surgeon, and in ordinary cases the operation is quite simple—the instrument being carefully introduced under the skin and the contracted end of the prepuce enlarged by a slight cut. Sometimes actual circumcision, by cutting off the foreskin, becomes necessary. Ordinary dressing of the wound is generally sufficient. Where the phymosis is complicated by inflammation, the exercise of some judgment is required with regard to performing the operation, and where any venereal affection exists it is generally unsafe to perform it, and should only be resorted to when rendered absolutely necessary.

PARAPHYMOSIS.

This term is intended to indicate a condition of the prepuce in which it is retracted, or drawn back, and forms a sort of ligature behind the corona glandis, so that it cannot be moved forward again over the glans. The skin rises in a tumor like manner over the corona or cervix, forms several rings around the part, and produces a compression as if a cord had been tightly drawn around the organ. The causes which may produce paraphymosis are thus defined: *First.*—"It may proceed from imprudence in persons, who, having the end of the prepuce too straight, cannot uncover the glans without pain, and when they have uncovered it, neglect to cover it again as soon as they ought; and thus the contracted part of the prepuce forms a constriction behind the glans. Soon after, the glans and penis swell, and the prepuce, being consequently very much distended, is affected in the same manner; an inflammation seizes upon both, and swellings quickly appear upon the stricture formed by the prepuce, so that the whole may be liable to a gangrene, or eating away of the flesh, if not quickly relieved. *Second.*—It may proceed from venereal virus, such as chancres in the prepuce, which, before they digest, are generally attended with inflammation, more or less considerable. This inflammation is alone sufficient to render the prepuce too straight for the size of the penis, in consequence of which a swelling may ensue like that before mentioned."

Remedies and Treatment.—When the difficulty arises from the first cause, the application of cold lotions or stramonium ointment may be sufficient to reduce the swelling. In all ordinary inflammations of the prepuce the stramonium

ointment will be found highly serviceable and efficient. Sometimes bleeding or the application of leeches may be desirable. The most effectual and permanent cure, however, is in a surgical operation by which the prepuce is slightly cut so as to enlarge its end. This is especially to be recommended in the case of children or young persons, as paraphymosis is likely to lead to injurious practices, or may result in consequences endangering the organ or the life of the youthful individual. When the difficulty results from the second cause, the treatment must consist in removing that—with the removal of the cause the trouble will terminate.

PRIAPISM.

This disease is defined as an unnatural and continual erection of the penis. This morbid state may come on suddenly or gradually, and is always entirely beyond the control of the individual. Its appearance is often attended by headache and a peculiar sensation described as heaviness or an uneasy feeling in the testes. Although liable to manifest itself at all hours, in many instances it usually comes on shortly after retiring to bed at night, and so affects the nervous system as to preclude all rest or sleep during almost the entire night, thus rapidly impairing the health of the sufferer. The continuance of the paroxysm may be of shorter or longer duration, and even become almost constant. Cases are reported in which it continued for several weeks, which were only relieved by the opening of veins in the organ, and which either terminated in impotence or narrowly escaped such a conclusion. Priapism is too often regarded as simply the result of badly regulated thoughts, the product of an evil aim; but while this may sometimes fully account

for its existence, it is more frequently characterized by the absence of all lascivious thoughts, by a total lack of desire, and even by a degree of deficiency in sexual power, and may be truly regarded as the consequence of a peculiar inflammatory condition which will thus manifest itself in spite of all efforts of the mind to control it—in short, as the result of an actual and firmly seated disease. The causes operating to produce priapism are but imperfectly comprehended, but among those assigned as calculated to originate it are spermatocele, which is more especially the case in young persons; a diseased state of the brain, a moral affection peculiar to those more advanced in years; gonorrhea and spermatorrhœa; gravel and inflammation of the bladder; injections and the use of bougies; debauchery; continued sexual excitement; and the administration of certain drugs. The effects resulting from it frequently exhibit themselves in headache, pains in the back, and soreness in the organ. Where the affection is of long continuance the general health becomes impaired to a great extent, and the more violent forms of the disease often result in impotence.

Remedies and Treatment.—It is often supposed that marriage is indicated as a remedy for priapism, and where it is the result of spermatocele, or has not progressed to a point indicative of a chronic disease, such a union will in all probability be highly beneficial; but where its origin is traceable to other causes, or where it has assumed a chronic form, dissatisfaction, difficulty, or misery is almost certain to follow marriage if entered into before the evil is corrected. In all cases it becomes desirable to discover the cause by which the difficulty is occasioned, and when discovered it should be imme-

diately removed. Nourishing but unstimulating diet, muscular exercise, frequently bathing with cold water, and keeping the mind firmly directed from the affection and intently fixed upon more entertaining subjects, will be found excellent adjuncts, if not in themselves sufficient, to effect a cure. As a means of checking or arresting an attack of priapism, bathing or sitting in warm water, or steaming the parts, has been found effective. Sometimes the application of leeches to, or opening a vein in, the penis, is useful or rendered necessary. Another, and very efficient, if not infallible, means of obtaining relief, is in the administration of an emetic. For this purpose, tartar emetic is usually employed, and the sickness which precedes and attends its action nearly always has the effect of allaying the priapism. Sometimes a bandage has been used, which, being tightly wrapped around the organ when flaccid, prevented the blood from entering its cells, and sometimes the same end has been more effectually accomplished by the use of two grooved pieces of wood, which, having been properly fitted, were securely fastened around the organ, thus securing any degree of compression desired.

HYPOSPADIAS AND EPISPADIAS.

Occasionally instances are met with where the urethra terminates before reaching the end of the glans penis, and opens either near the glans, on the under side, or at a point further back, and sometimes even near the body, or as far back as the perineum, thus giving rise to much annoyance in voiding the urine, and rendering procreation difficult or impossible. This condition is intended to be expressed by the term *hypospadias*. This state of the organ may be congenital, that is, it may

exist at birth, or it may be the result of venereal disease.

In *epispadias* the opening of the urethra exists on the upper, instead of the under, side of the penis, and in some cases is near the glans, while in others it may even be near the pubis. This condition very seldom occurs.

Remedies and Treatment.—For these evils there is sometimes no remedy, and all that can be done is to use appliances by which the annoyances attending them, in consequence of the unnatural direction given to the course of the urine, may be mitigated or lessened. In most case, however, the defect can be entirely removed by the skillful surgeon, which is accomplished by opening a passage, with the proper instrument, through the organ, and gradually healing the wound, keeping the passage from being closed by the aid of the catheter. Where any defects of this class exist in children, they can more generally be corrected than when subsequently occasioned through disease.

AFFECTIONS OF THE URETHRA.

It sometimes happens that the canal of the urethra is so narrowed or contracted that the urine is passed through it with considerable difficulty, very slowly, and even with pain. This condition is mostly found in children or young persons, and is sometimes congenital; but in most case it naturally remedies itself with the growth of the person. Sometimes, however, it becomes desirable and necessary to enlarge the passage, which can generally be done by the use of bougies.

Then, again, a strange state of irritation may exist in the urethra, so that pain or smarting attends the passage of the urine through it. This

often seems to arise without any apparent cause, and may last but for a short time, or be more or less constant, and occasion considerable suffering. Such difficulties may, to a large extent, be obviated by avoiding stimulating and constipating food, fermented drinks, coffee, and all excesses of any kind. Cold water will be found the best drink, and sometimes a little carbonate of soda taken in it every morning will act like a charm. The bark of the white poplar, or the bark of the root of the white walnut, often proves an effectual remedy.

The *verumontanum*, the cutaneous eminence in the urethra before the neck of the bladder, around which the seminal ducts and the ducts of the prostate gland open, may also become irritated or inflamed, and even enlarge, by swelling, to such an extent as to totally obstruct the passage of the urine. It is especially apt to become affected from disease of the prostate gland, in consequence of the sympathy existing between these parts. It may also become irritated or inflamed from long retention of the urine, or from the irritating quality of the urine itself, and be affected by various causes not always easily detected and often altogether beyond discovery. In these affections the means usually employed for reduction of inflammations are resorted to, and often with excellent effect. Irritation of the *verumontanum* not unfrequently produces or is attended by the complaint known as incontinence of urine, an annoyance which can generally be obviated by administering a little carbonate of soda upon rising in the morning, and drinking freely of gum arabic water.

STRICTURE.

Of all urethral affections this is perhaps the

most common, and it may also be called the most serious, as it often leads to very deplorable consequences and fearful suffering. By the term stricture is meant any diminution or morbid contraction of any passage, tube, or duct of the body, and stricture of the urethra is simply a partial or total closing of the urethral canal. Sometimes, though rarely, a urethral stricture is congenital, being found to exist at the time of birth, but in most cases of this kind nature itself effects a cure as the child grows up, although it may occasionally become necessary to make use of bougies—a course of treatment, however, which should only be resorted to when clearly indicated by the necessity of the case. Stricture may also come on spontaneously, or it may proceed from diseases of the prostate gland, or from necessary operations upon the penis, but in most instances where it exists it is the result of, and must be exclusively attributed to, some venereal affection. Strictures are generally divided into three kinds, known as *spasmodic*, *inflammatory*, and *permanent*.

The *spasmodic stricture* resembles a spasm or cramp, and is not attended by a permanent diminution or closing of the canal. It usually comes on spontaneously, being generally produced by excesses or exposure, although it may also be otherwise occasioned, sometimes resulting from peculiar and irritable conditions of the body, and at others, even becoming periodical. Indulging to excess in eating and drinking, or exposure to damp or cold, and in some cases even very slight imprudences in these respects, may bring on a spasmodic stricture which may be more or less severe. The distinguished English physician, BRODIE, has thus both described this form of stricture and indicated

its remedy: "A man who is otherwise healthy, voids his urine one day in a full stream. On the following day, perhaps, he is exposed to cold or damp; or he dines out and forgets, amid the company of his friends, the quantity of champaign, or punch, or other liquor containing a combination of alcohol, with a vegetable acid, which he drinks. On the next morning he finds himself unable to void his urine. If you send him to bed, apply warmth, and give him Dover's powders, it is not impossible that in a few hours the urine will begin to flow. After the lapse of a few more hours, you give him a draught of infusion of senna and sulphate of magnesia, and when this has acted on the bowels, he makes water in a full stream." This mode of procedure is generally effective, especially when adopted in the early stage of the difficulty; but it should always be remembered that considerable and often extreme suffering is endured by the patient, that a too large accumulation of the urine in the bladder may burst that receptacle and occasion death, and that relief may always be instantly had by the use of the catheter. While this instrument should not be unnecessarily used, neither should its employment be too long delayed. It should, however, be always applied by skillful hands, as its improper use may result in dangerous inflammations or even occasion permanent stricture.

Inflammatory stricture is defined as a contraction or narrowing, to a greater or less degree, of the urethral canal in consequence of inflammation in its walls. Various causes may operate to produce this difficulty, and it is almost sure to follow the unskillful introduction of instruments into the urethra. It is also an almost invariable result of

gonorrhea. The stricture, however, always subsides by reducing the inflammation, and the only remedies allowable are such as are designed to accomplish this end. Such remedies applied to the parts will generally produce the desired effect; although it may sometimes become necessary to apply leeches to the perineum or to extract a little blood.

Permanent stricture, as the term implies, is a more durable affection. It is usually occasioned by long continued inflammation of the urethra, in consequence of which portions of the walls of the canal become indurated or hardened and the passage contracted. This induration may exist in any part of the urethra, but it is more generally seen in the membranous and bulbous portions. In form and extent it may vary in all sorts of ways—strictures being found extending in different directions, and of all sizes and shapes consistent with the organ they occupy. A number of strictures, sometimes half a dozen or more, may simultaneously exist in different portions of the urethra, although the number seldom exceeds two, and is usually limited to one. The causes regarded as being capable of producing a permanent stricture are various, and it may even be congenital. Among those most generally enumerated are the unskillful use of instruments and injections; tumors, or diseased growths, in the urethra; and cicatrices, or scars, from wounds, sores, or ulcers. A more frequent cause, however, is found in the remains of some venereal affection, such as cicatrices and other consequences from chancres, or long continued gleet; but in the great mass of cases where strictures exist they are directly caused by the inflammation and consequent indurations attending long continued or

badly treated gonorrhea—so generally is this the case that whenever a stricture is referred to, unless otherwise explained, it is at once concluded to have been thus caused.

The effects of stricture are manifested in the discharge of the urine. Sometimes this effect is but slightly seen, the water leaving the urethra with but little difficulty, so that stricture may exist for a long time without being even suspected. In most cases, however, the urine is discharged with considerable difficulty and even pain, and leaves the urethra in two or more irregular and feeble streams, or in a slow and annoying dribble and with such little force as to run over the clothes or body. In other cases, still, it cannot be discharged at all. In all cases of stricture the same difficulties that attend the discharge of the urine must necessarily also attend that of the seminal fluid.

The irregular flow of the urine, however, is not always alone sufficient to determine the existence of a stricture, as a similar irregular flow may be occasioned, for a shorter or longer time, by other and entirely different causes; but its existence can always be ascertained by a skillful examination of the urethra aided by proper instruments.

Remedies and Treatment.—In many cases of stricture considerable judgment is required to determine whether cures should be attempted. It is very often best not to make such attempts, and this may be regarded as the proper policy in all cases which exhibit no tendency to grow worse: otherwise, the earlier the attempts are made the better, and the greater will be the probabilities of cures being effected. The most approved course of treatment of a permanent stricture is that known as *dilatation*. This consists in the use of instruments by

which the contracted part of the urethral canal is dilated, expanded, or enlarged. Dilatation may be either sudden or rapid, or gradual. In sudden or rapid dilatation a large sized bougie is introduced into the urethra and the stricture is suddenly expanded, or a small sized instrument is first introduced, which, being removed, is immediately succeeded by one larger, this being again succeeded by one still larger, and in like manner larger ones are used in rapid succession one after the other until the desired size can be freely introduced. In gradual dilatation the small sized bougie is first employed, no larger instrument being used until the irritation occasioned by the introduction of the smaller one has subsided. This often takes considerable time, so that months are sometimes consumed before an instrument of the desired size can be used. This course of gradual dilatation is generally preferred to the sudden or rapid course, because it is regarded as both safer and more likely to effect a permanent cure, it having been observed that the more speedily the passage is dilated the greater is the probability that it will contract again. In some cases, however, sudden dilatation is clearly indicated, and results in a speedy cure.

Different objects are sometimes sought to be accomplished by the use of the bougie, but usually the result desired is the gradual reduction and removal of the stricture, and this is supposed to be effected by a process of absorption engendered or brought into action by the use of the instrument. Most frequently, however, the permanent stricture remains a life-long affection, being absolutely incurable and having a constant tendency to grow and to contract the passage: the only object then in using the bougie is to keep the canal from closing,

and the common practice is to introduce it periodically—at intervals a shorter or longer time apart.

Bougies are made of various shapes and sizes, and to acquire a knowledge how to use them requires some instruction. Without this knowledge no attempt should be made to use the instrument, as its unskillful introduction into the urethra may be followed by profuse bleeding, ruptures of the membrane lining the urethral canal, ulcerations and wounds which may leave permanent cicatrices, dangerous inflammations, swelling of the testes, and various other consequences more or less serious. It not unfrequently happens that death is thus directly and speedily caused. Sometimes also the instrument takes a wrong direction and makes an opening which may change the course of the urine. Instances have occurred where such openings were made into the bladder, the rectum, the abdomen, and other parts, the course taken by the instrument having been discovered only after the mischief was fully done. Then, again, the wounds made by it have led to what is known as infiltration of the urine, by which is meant the passage or filtering of the urine, to a greater or less extent, after its discharge from the bladder, into other parts of the body. This infiltration may follow any rupture or wound, however caused, of the membrane lining the urinary canal, and then the urine passes into the tissues of the penis, or some other part, and soon produces the most fearful consequences. The part to which it has passed immediately swells and becomes painful, and speedily the whole system becomes involved and diseased; and unless the proper efforts are at once successfully resorted to to remove the difficulty, mortifi-

cation, sloughing away, or ulceration of the affected part will quickly follow, and the termination will be the speedy and fearful death of the individual.

Notwithstanding the dangers, however, that may attend the unskillful use of the bougie, the knowledge and skill necessary to render it fully available by the patient are readily acquired, and in most cases the strictured individual soon learns how to manage the instrument and usually introduces it himself, many even becoming experts in its use.

In the treatment of stricture the simple bougie is not always sufficient, and therefore cutting or cauterization is often resorted to. This is done by introducing into the urethra a small tube through which a sharp instrument is passed, by which means the stricture is reached and cut, divided or scarified; or, instead of cutting, caustic is passed through the tube and applied to the stricture, by which means it is cauterized or burnt. Of these two modes that of cutting is generally preferred, being regarded as less dangerous and less likely to be attended or followed by serious consequences. In either case, however, great skill is required in performing the operation, but still greater judgment in determining whether it is proper to perform it.

AFFECTIONS OF THE PROSTATE GLAND.

The prostate gland is frequently the subject of inflammation and its consequences. This inflammation may be caused by blows upon the perineum; by severe pressure from long riding on horseback, or injuries otherwise occasioned to the perineum; by the introduction of bougies into the urethra; by gonorrhea; and in various other ways. The effects that may follow it are as various as the

causes that may produce it. From the location of the gland, the least swelling or enlargement in it, necessarily produces pressure upon the urethra and so obstructs the passage of the urine, sometimes even totally stopping it and giving rise to much suffering, and occasionally producing inflammation of the bladder and even of the testes. The formation of abscesses is peculiarly liable to follow any continued inflammation of the gland, and these may break internally or externally on the perineum, and become very annoying, painful and difficult to cure. When they break internally, they occasion a more or less continual discharge of matter through the urethra, and when externally, an equally continued discharge is occasioned on the perineum. The inflammation may also become periodic, and give rise to permanent tumors, which will be more or less continually producing trouble or constantly requiring treatment or some operation to afford relief. Then, again, it has resulted in induration or hardening, so that the gland became like cartilage or bone. Sometimes it even ends in matification, which nearly always proves speedily fatal. Swellings of the gland are of somewhat frequent occurrence, especially in men of advanced years who have led inactive lives or who have indulged in excesses. The most singular affection, however, to which the gland is subject, is the formation of calculi, small concretions or stones, within it, which tend to enlarge it and produce other evils.

Remedies and Treatment.—When the inflammation or swelling proceeds from blows, pressure, or other injuries, the patient is generally recommended to keep at rest upon his back, hot fomentations, with laudanum, being persistently applied to the

perineum. Sitting in hot water, or over steam, as hot as they can be endured, or a hot bath in connection with such means as will induce profuse perspiration, are equally applicable. The speediest and most effectual mode of reducing the inflammation is generally the one to be preferred. Such means being adopted, the bowels should be opened with a mild and speedy cathartic, and kept properly regulated, the diet should be nourishing but unstimulating, and the habits temperate in every respect. Sometimes leeches are applied to the perineum, especially when the dark color of the skin indicates the injury by which the inflammation was occasioned to have been a severe one. It is occasionally difficult to reduce inflammations thus produced, but when vigorously treated in their early stages the desired object can often be speedily attained. In cases of chronic inflammation cold astringent lotions are frequently applied, or the mercurial ointment is used by rubbing it on the perineum until its effects are felt upon the system, while the bowels are opened with castor oil, the diet being restricted to light food, and all stimulants forbidden. When calculi have formed in the gland they may sometimes be removed by the surgeon, and sometimes discharged through the urethra by effecting a relaxation of the parts through the use of warm fomentations or warm baths. Numerous other expedients, operations, and remedies are often resorted to to meet the contingencies, to relieve the pains, or to effect a cure of the different affections to which the gland is subject, and it should always be borne in mind that nearly all the diseases to which it is liable are exceedingly obscure and difficult of successful treatment, and should therefore receive the prompt attention of the skillful practitioner in their earliest stages.

CHAPTER XV.

DISEASES AND AFFECTIONS OF THE FEMALE GENERATIVE ORGANS.

THE difficulties, affections, and diseases, of divers kinds, incident to the generative organs of the female, may almost be pronounced unlimited, and, unfortunately, many of them are often so extremely complicated that no human effort or skill is capable of affording much relief.

AFFECTIONS OF THE VULVA.

The external labia, in infants, are sometimes found partially or totally grown or adhering together, occasionally seriously interfering with or totally preventing the passage of the urine, and in the latter case soon producing much suffering. Any difficulty of this kind should be at once corrected, and this can generally be readily done by the surgeon, although instances sometimes occur in which the parts are so completely united that they can never after be safely separated. Adhesion or growing together of the labia has often resulted, and may occur at any time, from inflammations, from chafings, or from irritations—effects which may proceed from different causes and which not unfrequently result from a want of proper cleanliness. It may also be caused by injuries to the labia produced at childbirth. However occasioned, such adhesions not unfrequently lead to inflammations or dangerous ulcerations, and should therefore receive the prompt attention of the surgeon in their early stages, thus avoiding much subsequent suf-

fering and the irremediable consequences which are likely eventually to follow.

The *nymphæ* may similarly adhere or be grown together at the time of birth, or a similar condition may occur in after life—in either case the surgeon's early attention is the best and generally the only course to be recommended. The *nymphæ* are also subject to unnatural growth and enlargement, an affection sometimes taking place in infancy, but more frequently after puberty. This may occasion much annoyance and suffering, and sometimes even engenders cancerous affections or results in gangrene. The causes which produce unnatural growth or enlargement of the *nymphæ* are not definitely known, but it is sometimes ascribed to constitutional tendencies and at others it is no doubt correctly attributed to bad habits and excesses. The course of treatment recommended as likely to mitigate the evil consists in rest, in avoiding stimulating food and drinks, in taking mild laxatives internally and applying cold lotions externally, and in freely using cold water and observing the most scrupulous cleanliness. If this fails in producing the desired effect, the application of leeches may, perhaps, succeed; if not, there is considerable certainty of complete success in the surgical operation known as *nymphotomy*, by which is meant a removal of the *nymphæ*—an operation not specially to be dreaded nor exceedingly painful.

The *clitoris* may be affected by a tendency to enlargement or unnatural growth similar to that of the *nymphæ*, resulting in much annoyance and leading to immorality and suffering. The causes producing this unnatural growth or enlargement are as obscure as its effects are apt to become sadly apparent, but tendencies of this kind are very

probably correctly ascribed to indolence and a lack of proper exercise or occupation, to exciting diet, high living, and vicious habits, and to conversations, associations, and other influences upon the mind which awaken amatory feelings or excite the passions. The corrective means employed in enlarged nymphæ are the only remedies which can be recommended, and when these fail the amputation of the part, a simple and not very painful operation, may become alike necessary and desirable.

These enlargements of the nymphæ and clitoris, and especially of the latter, invariably result in great annoyance and suffering, and may lead to habits and practices which may almost be called humiliating to human nature, and which will certainly bring disgrace and suffering upon the female affected and shame upon her nearest and dearest friends. These consequences may not be deserved to the extent to which they are sure to follow, but civilized communities could hardly be expected to retain their civilization very long by persistently excusing or overlooking foul and immoral practices, even when these are due to disease and not the direct offspring of moral turpitude. The opinion is very generally entertained among professional men, that much of the apparently unaccountable immorality often seen is more due to physical causes than to mental or moral defects, an opinion which should especially receive the attention of mothers and others upon whom nature or society has enjoined the duty of enlightening and protecting the young and inexperienced.

INFLAMMATION OF THE VULVA.

Different causes, some of which are not compre-

hended nor even known, may operate to produce inflammation of the vulva, from which many annoyances must necessarily follow, while it may also lead to habits and practices alike vicious and deplorable. Among the causes known as capable of producing this inflammation are menstrual derangements; ascarides (a peculiar kind of worms) in the rectum; and injuries to the parts at child-birth. A not uncommon cause is a want of cleanliness: this necessarily results in an accumulation of the natural secretions, and these, becoming acrid or decomposed, lead to irritation, which not only produces annoyance, but also tends to originate vicious habits, or they may occasion inflammation peculiarly apt to be followed by its worst consequences. The effects of inflammation of the vulva are always extremely disagreeable, and may even exhibit themselves in the growing together of the parts, in the discharge of offensive matter, in filthy and malignant ulcerations, or in mortification which will speedily extend from the parts first affected to others and unless successfully arrested terminate fatally.

Remedies and Treatment.—Ordinarily the early stages of the inflammation can be effectively remedied by establishing regularity of the bowels, and by the frequent use of cold water, or of cooling lotions. A wash made of alum and water, about a teaspoonful of the former (pulverized) to a pins of water, may sometimes be used to good effect. The stramonium ointment, in the early stages of inflammations generally of these parts, may prove effective: it should be applied about twice or thrice, or oftener if necessary, in twenty-four hours, and the parts should be well washed with castile soap and water before each application. In case of much

soreness, port wine and water, equal parts of each, may be applied. When menstrual derangements exist, these must at once be remedied, and the same may also be said of constipation. When eruptions occur, and these applications are ineffectual, washes of chlorine, camphor, and nitrate of silver are employed, and it should always be borne in mind that this condition may lead to dangerous consequences and should therefore at once receive skillful attention. To prevent the labia from adhering or growing together, which they have a tendency to do in cases of inflammation, soft lint, saturated with the lotion or application used, may be so applied as to keep them separated. In all cases rest and quiet are desirable the diet should include nothing stimulating, heating, or irritating of any kind, and all stimulating liquids should be avoided. In the severer forms of the disease, the observation of these particulars becomes imperative, as does also the free opening of the bowels and their proper regulation by cooling purgatives. It may be proper here to add, that nearly all difficulties of this kind can be more readily avoided than cured, and to do this simply requires such regular ablutions as may be necessary to maintain proper cleanliness.

PRURIGO OF THE VULVA.

This affection bears a strong resemblance to the prurigo of the scrotum in the male, and produces a similar intolerable itching. Though all the causes producing it are not comprehended, it is known to arise from ascarides irritating the rectum; sometimes from the discharge in flour albus; from changes taking place in the genital organs at the time of puberty; and from some peculiarities or

derangements of the menstrual discharge, so that, in some women, it attends every monthly period. It is also supposed to proceed sometimes from some impurity of the blood, from gravel, from parasites and uncleanness, from constipation, and from some irritating tendency of the natural secretions of the affected parts. It may also occur without any apparent or traceable cause or dependence upon some other affection, in which case it is said to be idiopathic. Prurigo is peculiarly apt to attend pregnancy after about the fourth month, in which case it generally continues, in spite of all that can be done, till after delivery, whether at the full term or by miscarriage. In some women it has a tendency to come on during the time they are nursing children. Usually its effects are simply confined to itching, but this becomes so great and constant as to occasion terrible suffering, the patient sometimes becoming distracted or delirious—so frantic that her hands have to be secured to prevent her from doing injury to her person. It nearly always precludes her from entering society so long as the disease continues, so that she confines herself to the house, often to brood in solitude over her sufferings. The attention of the mind, too, being continually drawn to the affected parts, together with the means applied to obtain relief, often result in the excitement of venereal sensations. Thus the complicated sufferings produced by prurigo frequently render the existence of the sufferer almost insupportable. Deep ulcers, capable even of destroying the nymphæ, are sometimes engendered by it, though very rarely; while small ulcers, or aphthæ, frequently make their appearance upon the labia and nymphæ. "From intercourse with females under these circumstances," says an Eng-

ness, distress, or misery, in any or many of its divers forms; where it is of greater extent, it may render marriage impossible, and must necessarily impede the discharge of the menses, and produce much sickness and physical pain and suffering; and where it is total, a remedy soon becomes imperative in consequence of the many evils following from the confinement of the menstrual fluid. The menses being secreted from the uterus at each period, the evils attending their confinement soon manifest themselves in an enlargement of the abdomen, leading to unpleasant suspicions; in pains in the loins and back; in various uterine complaints, and in many strange symptoms and appearances. The general system soon becomes affected, and unless relief be obtained, death finally terminates the sufferings of the patient.

Remedies and Treatment.—Where the narrowness or obstruction simply results from temporary inflammation, which frequently happens, cold injections and keeping at rest will generally be sufficient. Where it is due to other causes, the only available remedy must come from the surgeon. In cases of simple narrowness of the vagina, the process of dilatation with the proper instruments, somewhat resembling the dilatation in stricture, has been resorted to. Although a difficult and dangerous operation, its success can generally be assured by the skillful surgeon and the patience of the patient. It is even possible, where the walls have entirely grown together, to form a new passage by cutting a narrow opening through the organ to the womb, and then keeping it from again growing together and gradually dilating or distending it—an operation, however, requiring great skill and too hazardous to be undertaken unless requisite as a means

of preserving life. In cases of simple obstructions at the orifice of the vagina, slight operations may be successful, and where the difficulty is produced by an imperforated hymen the remedy is more simple still. A case of this kind, reported by Dr. DENMAN, may serve as a general illustration: "The patient, a young woman twenty-two years of age, having many uterine complaints, with the abdomen enlarged, was suspected to be pregnant, though she persevered in asserting the contrary, and had never menstruated. When she was prevailed upon to submit to an examination, the circumscribed tumor of the uterus was found to reach as high as the navel, but there was no entrance to the vagina. An incision was carefully made through the hymen, and not less than four pounds of blood, of the color and consistence of tar, were discharged; and the tumefaction of the abdomen was immediately removed. The blood discharged was not putrid or coagulated, and seemed to have undergone no other change but what was occasioned by the absorption of its more fluid parts." When the obstruction is occasioned by tumors forming in the organ, the treatment often becomes very difficult and demands the best medical and surgical skill. In such cases, the performance of an operation is hardly ever admissible. It may be added here, that most cases of difficulties in the vagina, capable of obstructing the menses, are of a nature which admit of a ready remedy, and that whenever the menstrual flow is obstructed from such a cause the difficulty should be immediately ascertained and removed, thereby guarding against consequences which must always produce disease and suffering, while they may also prove prematurely fatal.

INFLAMMATION OF THE VAGINA.

Sometimes the vagina is attacked by inflammation, in consequence of which it becomes swollen, contracted, and variously affected. This inflammation may follow from any irritation of or injury to the organ, however occasioned, or from diseases existing in itself or in contiguous parts. It is also apt to result from excesses, and may even proceed from colds or from a too stimulating diet. It frequently occurs in the early days of marriage. It is often manifested by a feeling described as one of heat and fullness in the organ, by pains extending to the groins and other parts, or by a partial obstruction of the urine. Its effects may exhibit themselves in a peculiar discharge, which, as it continues, undergoes considerable change from its first appearance; in prurigo and its attendant evils; or in ulcerations, and these, being generally confined to its internal villous coat, which is sometimes partially or wholly cast off, may end in cicatrices contracting the canal, or in the growing together of its walls and closing it.

Remedies and Treatment.—Sometimes, when the inflammation is but slight or results from slight irritation, it will pass off of its own accord in a little more or less than a week, but from the effects to which it may lead it is always desirable that it should be speedily arrested. This can generally be done by the injection of cooling or very slightly astringent lotions or washes, or of cold water alone, and by proper attention to the diet and to regulating the bowels as recommended in the treatment of inflammation of the vulva. When the inflammation is neglected and becomes complicated with ulcerations, the treatment is rendered difficult,

and demands considerable skill and judgment, so that the best aid may become necessary, and even fail in effecting a cure.

AFFECTIONS OF THE WOMB.

The mouth of the womb may, in rare cases, be partially or totally closed at the time of birth, or such a condition may be produced by accident or injury to the organ in after life, resulting in consequences somewhat similar to those described as attending a closure of the vagina. For difficulties of this kind there is frequently no remedy, and the propriety of attempting any is always a question which can alone be determined by the skillful surgeon. Sometimes special treatment may produce good and effective results under proper management; and sometimes operations may even be resorted to, but these are generally so extremely hazardous in their nature and probable consequences that they are rarely attempted. In cases of closure of the womb, patients can seldom accomplish much by their own efforts, and must be governed by the surgeon; but with proper care and attention there is no occasion for such cases to occur, as they can always be prevented when not congenital.

FALLING OF THE WOMB.

Falling of the womb, also called *prolapsus uteri*, *procidentia uteri*, and *hysteroptosis*, simply consists, as is expressed by the words, in a falling down of the organ. The womb or the supports by which it is held in position may become relaxed in their attachments from various causes, and, as a consequence, it descends into the vagina. In the description of the uterus, in the chapter on the fe-

male organs, it is shown how the womb is attached and supported in its place, from which it can be readily seen how its own weight may cause it to fall whenever it becomes weakened in its attachments or supports. So long as the relations of these parts to each other are natural, it will be retained in its proper position; when otherwise, it at once becomes liable to accidents. The degree or extent to which it may fall or sink into the vagina may differ in different cases, and even in the same case the falling may be limited at first and afterwards increase. Thus we find the womb merely settled down into the vagina to distances more or less limited, when the falling is called *imperfect* or *incomplete*; and then again we see it fallen so low that its neck protrudes through the external orifice, when the falling is called *perfect* or *complete*. The descent of the womb necessarily produces pressure, in proportion to its descent, upon the bladder in front and upon the rectum behind, seriously interfering with the evacuations, and occasioning much annoyance and suffering. It also necessarily enlarges and expands the vagina. The neck of the womb being attached to the upper part of the vagina, the latter is dragged down or inverted, and when the falling is complete may be said to be turned inside out.

During pregnancy the womb is supported in the cavity of the abdomen; after parturition it resumes its natural place, but it is much enlarged and its weight increased: the vagina is much larger than usual, and it necessarily follows that until it has again contracted to its natural size, the womb is peculiarly liable to descend into it. It therefore also follows that sitting up in the erect position too soon after delivery is very apt to occasion falling

of the womb, and the cases in which it is thus occasioned are so exceedingly numerous that they even sometimes astound the professional man. In speaking of falling of the womb among women who have borne children, an English professor of obstetrics says: "I believe that nineteen cases in twenty arise from sitting up too soon after delivery." The complaint, however, is too general to be due to this cause alone, which has only been specially explained here as a warning to the young and inexperienced married woman.

Falling of the womb is found to prevail among women of all ages and conditions, and the complaint is so very general that the female who is unaffected by it may even find in this fact a reason for rejoicing and congratulation. While it is naturally more general among married than among single women, it nevertheless prevails to an enormous extent among the latter, and is even sometimes found in children two and four years before they have reached the age of puberty. That its astounding prevalence is due to the habits and practices, the modes of life and of dress, that characterize an unenlightened civilization, there can be no doubt; for the testimony of travellers uniformly affirms that among the women of those nations and tribes whom we call uncivilized or barbarous it is scarcely ever heard of. Neither can there be any doubt that these causes will remain until that degree of enlightenment shall have been attained when the simple requirements of nature shall be regarded as superior to the decrees of any fool who may invent a fashion; yet this should not deter the physiologist from pointing out the causes that may produce the evil, the sufferings that may attend it, and the means of preventing or correcting

it. Of the many causes, then, that may produce falling of the womb, the following may be enumerated: Any exertion whatever which may produce a strain upon the organ, or parts connected with it, such as heavy labors and liftings, running up stairs, reaching incautiously or violently above the head, straining in consequence of constipation, remaining long upon the feet, &c.; any direct injuries to the organ, or parts connected with it, whether sudden, like those that may happen at childbirth, or in attempts at criminal abortion, or otherwise, or gradual, like those that may follow from the constant pressure of the stomach and bowels in consequence of compressing the waist, &c.; any engorgement or increase in the weight of the womb, such as may result from disease affecting it, or from retention of the menses, &c.; or any habit, practice, or mode of life which may lead to debility or impair the muscular system, such as excesses of any kind, long continuance in constrained positions of the body, modes of dress which compress and deform the body and prevent the free circulation of the blood, want of exercise in the free air, and innumerable other causes which operate to produce debility and a consequent relaxation of the parts.

The symptoms attending falling of the womb may be manifested in various ways, such as pains at the sides of the sacrum or in the small of the back, peculiar sensations in the groins, feelings of weight or painful dragging in the region of the uterus, fullness and pressure in the vagina, lassitude and weariness in the limbs, distressing nervous sensations, headache, irritability, loss of appetite, nausea and vomiting—in short, in a disordered state of the entire system. So varied are the symp-

toms to which it may give rise that in many cases they have been mistaken for purely constitutional derangements and debility, and were accordingly treated with tonics and otherwise without the least effect, the real difficulty remaining unknown until it had progressed (the symptoms increasing in severity with its progress) to an extent rendering it painfully evident. So general is the influence exercised by the womb that its falling may affect almost any organ of the body, and thus vary or enlarge the symptoms attending it—not unfrequently other organs being deemed diseased, when, in fact, the diseased state apparently exhibited by them simply results from the condition of the womb. When the falling has reached the point known as perfect or complete, the pains in the loins and back are considerably increased, while most of the other symptoms attending its incomplete stages either disappear or are much mitigated; neither would they then be of any use in determining the complaint, as it becomes too fully evident. It is not unfrequently the case, however, that it remains unrecognized by the patient until it has either reached this stage or approximated to it.

Falling of the womb, if of long continuance, may result in attachments being formed to some other part, so that it cannot be again replaced in its natural position; and where the falling is complete, the exposure of the protruding part to the air, and to contact with the limbs and the dress, is almost certain to lead to inflammation, and this may terminate in mortification, or even render the removal or extirpation of the organ necessary—an operation too often fatal to be resorted to except under extreme necessity.

Remedies and Treatment.—When falling of the womb is but limited, it is quite probable that a cure may be effected by simple remedies diligently applied, and therefore it becomes important to ascertain its existence as soon as possible and correct it, for it is almost certain to be continually tending towards a worse condition or a complete falling. In its early stages there is a fair probability of successfully treating it—subsequently these probabilities are much lessened, or a cure becomes wholly impossible. The remedies employed consist mainly in cold applications, these being freely used internally and externally. The object is to stimulate locally, so that the relaxed parts to which the difficulty is owing may be contracted and finally regain the proper strength to support the fallen organ. For this purpose cold water may be found sufficient where the relaxation of the parts is not too great, while in all cases, no matter how far advanced, it will be beneficial. It is applied internally by injection into the vagina and sometimes also into the rectum, and externally by washing and bathing, by dashing it repeatedly and plentifully over the groins, pubes, and inside of the thighs, by the shower and douche baths, or by sea bathing, which is to be preferred wherever convenient. Cold and astringent lotions and washes are also employed. Of these, such as are made of vegetable substances are preferred. They may be made from various vegetable products, but the following may be found as serviceable as any:

Take of white oak bark, two ounces; and of water, one quart. Mix, and boil down to one pint. Strain well, and when cold use as an injection at night and in the morning, injecting two or three times at each application. A stronger preparation is made by taking of nut galls,

powdered, two ounces; of water, one pint. Mix, and boil ten minutes. Strain, and when cold use as above. An infusion made of the root of golden seal and of the bark of the bayberry root, is often found an efficient vaginal enema.

The taking of medicines generally proves of but little service, except in so far as some of them may serve to impart tone to the relaxed parts. As the disease is generally the result of weakness and debility, medicines corrective of this condition, and tending to aid in the restoration of the general health, may be of great service. It is always essential that the general health should be maintained, but in too many cases the vast amount of medicine used is productive of much more injury than good.

The condition of pregnancy is sometimes regarded as a remedy, and not unfrequently as at least favorable to a cure. If the case be skillfully managed by the physician immediately after delivery, and his efforts be fully aided by the patient, a cure is often probable; but it may almost be stated as a rule, that pregnancy only serves to render the disease worse. In the early stages of pregnancy the fallen womb generally descends still further, but soon after the third month it usually rises spontaneously into the cavity of the abdomen. Cases, however, are reported where it remained fallen until nearly the full period, and others in which it fell just prior to delivery, and delivery has even taken place when the organ was partly outside of the body.

It is always desirable that the womb should be replaced in its proper position in all cases where it has fallen. In many cases this is in fact the very first thing that should be done, and the patient

should lie on her back during the entire time that the subsequent treatment continues, in which position the organ and other parts are more readily retained in their proper places. Many of the symptoms attending falling of the womb are always lessened or removed by lying down, because in this position it is relieved from pressure and inclines to return to its proper place. In many cases, however, such a position cannot be long maintained without tending to produce a relaxation of the parts (the very thing which is sought to be obviated) and derangements of the general health, and whenever such is the case it must be abandoned and mild exercise and other means resorted to.

It is a very easy matter, generally, to restore the fallen womb to its proper place, and in many cases it will return to its natural position whenever the patient lies down, but the difficulty is to keep it there. Lying upon the back for weeks and months, when the woman is otherwise in tolerable health and anxious to be about, is equally disagreeable and impracticable, and yet as soon as she rises or makes the least exertion, down falls the womb again. To prevent this, certain instruments have been contrived, known as *abdominal supporters* and as *pessaries*.

The abdominal supporter answers the purposes of a truss, and is fitted to the abdomen externally, being intended to hold up or support the internal parts. It has been made of various styles and shapes, and has alike received the highest commendation and the severest condemnation—much more of the latter, certainly, than of the former. The truth, however, seems to be that a good abdominal supporter, properly constructed and skillfully fitted and adjusted to the body, will often

produce the most beneficial results, especially in the early stages of the complaint, but if these requirements cannot be accurately complied with, which is always a somewhat difficult matter, the supporter had better be cast aside, as it is certain to do no good and almost equally certain to do much harm. In itself, then, the instrument may be regarded as deserving of attention as a mechanical agent which may be rendered available, in certain stages and under certain conditions of the disease, its impracticability existing not in intrinsic demerits, but in the difficulty of properly applying it—in a lack of the judgment and skill necessary to its proper use.

The pessary is an instrument of quite a different kind. It is of ancient origin, mention being made of it by some of the oldest medical writers—Roman, Greek, Egyptian, and others. It is designed to hold up the womb internally, and is therefore introduced and remains in the vagina. It must necessarily be made into a firm body, somewhat larger in diameter than the diameter of the organ into which it is to be placed—not so large as to occasion pain, and yet not so small as to drop from the body when any strain takes place, by coughing, sneezing, or otherwise. Its usual diameter varies from two to two and a half inches, and it also usually has an opening through it so as to admit of the evacuation of the menstrual fluid and other secretions. It has been made of various substances, vegetable, animal, and mineral—from the leaves of the common plant, formed into a compact body, to pure gold; and although it has generally been round or oval, it has been made of various shapes, from the round ball and crooked horse-shoe to the straight and long stem or cylinder. The material

of which it is now generally composed is oiled silk or rubber. This is made into various shapes and stuffed, or inflated with air, and so adapted as to yield to the movements of the parts, and yet possess sufficient firmness to remain in place. When introduced into the vagina, the womb is pressed into its proper position and held there by its mouth resting upon the instrument. The instrument itself occupies the upper portion of the vagina, and is held in place by the contraction of the organ beneath it. Not unfrequently its removal becomes a matter of no little difficulty. Pessaries, however, are also made so as to extend through the entire length of the organ, being held in place by attachments extending from a bandage around the waist or other parts of the body. Notwithstanding all the efforts made, however, to devise efficient instruments of this kind, all that can be said of them is that it is hard to determine whether they have done as much good as harm. While in some cases they have undoubtedly answered a good purpose, in others they have as undoubtedly resulted in numerous evils. From their very nature they must always be objectionable and dangerous, yet it would be unjust to condemn them totally, when the obstinacy of the disease and the extremities to which it may lead are considered. If all physicians were men of skill and judgment, and if their advice were always correctly followed, perhaps there would be less censure of the pessary: at all events it would not produce much harm. Some abominable stories are told about this instrument, one, for instance, of a pessary having been forgotten in the vagina for ten years, and having been then only discovered while cutting away an immense mass of fungus growths to which it had

given rise; and another, of a pessary having been similarly retained in the vagina for thirty years, having only been found after it had occasioned symptoms indicative of cancer. Certain it is, however, that the instrument may produce ulcerations, offensive and dangerous growths, fistulous openings, and other disgusting evils; but these are always due to neglect, in consequence of which the material of which the instrument is made becomes corroded, or otherwise affected. In nearly all cases, in spite of every care, it will occasion more or less irritation and inflammation, and the latter sometimes requires no small degree of attention to prevent it from terminating in ulcerations.

While medical men are not much inclined to admit falling of the womb, in any of its conditions, to be absolutely incurable, the only practical action on the part of the patient is to secure the best skill and treatment possible in the first appearance of the disease. A cure is then both practicable and probable, while the disease may soon attain a point when it will be neither. It is unfortunately true that many difficult cases simply become difficult because of delays in attending to them, and as these delays, in most cases, are not involuntary, to the evils inseparable from the disease itself are often added others resulting from vain regrets and self-accusations.

OTHER DISPLACEMENTS OF THE WOMB.

The womb is liable to become displaced in different ways besides that of falling into the vagina. These are known as *obliquity*, *anteflexion*, *retroflexion*, *anteversion*, *retroversion*, *inversion*, *hysterocele*, and *fixtured* of the womb.

Obliquity of the womb is a leaning of the organ

forward or to either side. This may be occasioned by maintaining a certain position of the body for a long time, such as lying down or leaning forward. It is, however, generally a trifling difficulty, remaining usually unnoticed, except when pregnancy occurs. It may then impede delivery, or occasion some suffering; but, with proper management, even this may be obviated. Sometimes the obliquity is so great that a truss, made to meet the case, can be worn to advantage.

Anteflexion of the womb is a bending forward towards the pubis of the upper part of the womb, its lower portion remaining in place. This is also but a slight difficulty, which can be readily corrected, and which sometimes corrects itself. Frequently, however, it may be regarded as leading to anteversion of the womb.

Retroflexion of the womb only differs from anteflexion in that the upper part of the organ bends backward towards the rectum. It is regarded as leading to retroversion of the womb. Anteflexion and retroflexion are both said to produce barrenness sometimes, because the passage to the womb is closed at the point from which the bending commences.

Anteversion of the womb is a more serious difficulty, being a displacement in which the organ is fallen forward: that is, the fundus of the womb is fallen forward and downward, so that it presses upon the bladder, or rests between the bladder and the vagina, and the mouth of the womb is turned upward and backward towards the rectum—the vagina being relaxed and the bladder weighed down and pressed against the pubis.

Retroversion of the womb is the reverse of anteversion, the fundus being fallen backward and

downward towards the rectum, or between the vagina and the rectum, while the mouth is turned forward and upward in proportion to the descent of the fundus.

Either anteversion or retroversion may occur suddenly or gradually, and the symptoms, pains, and sufferings are so much like those attending falling of the womb (only more severe) that it is unnecessary to repeat them here. The treatment of these difficulties always requires the aid and advice of the skillful practitioner, and from the similarity of the symptoms even he will find it difficult to distinguish anteversion from retroversion short of a full examination. Formerly these complaints were but little understood, and regarded as fatal, "but now," says an old professor, "if a physician be called in early in a case of this description, the death of the patient will perhaps also be the death of his reputation."

Inversion of the womb, a not very frequent occurrence, is defined as a condition of the organ in which it is turned inside out. This may take place in different degrees, so that the fundus may simply be pressed downward into the womb to a small extent, resembling the depression or dimple in the bottom of a wine bottle, or of such extent that it protrudes through the external orifice. The inversion may be caused by a tumor, or by diseases producing a great softening and relaxation of the mouth of the womb. It may also occur shortly after delivery by force applied to the umbilical cord to remove the placenta. At this time the womb is large and flaccid, and a surprisingly slight degree of force applied to the cord may invert it. It is reported as a saying of Dr. Wm. Hunter, that under these circumstances "it as easily

inverted as the finger of a glove; but when contracted, it is as difficult to invert as a jack-boot." Of course, the proper thing to be done is to replace it again. When the inversion is but partial, or before the inverted portion has descended through the os uteri or mouth, a skillful attempt at replacement should always be successful; but when it is entire, replacement becomes extremely difficult. If the effort be made immediately after the occurrence of the inversion, success will probably attend it; but if any delay takes place, all efforts may prove of no avail, because the mouth of the womb will contract and form a ligature upon the inverted portion: inflammation will soon follow, and this, if not reducible, will terminate in gangrene and death, or in the necessity of extirpating the womb, in which case death is very apt to follow. The pains and sufferings attending inversion of the womb are always fearful, and in most cases are only terminated by the death of the patient. Cases of chronic inversion have, however, been known, in which the health of the woman was not seriously endangered, but these were very rare exceptions; for the usual attendants of this condition are frightfully profuse menorrhagia, incurable leucorrhœa, dangerous constitutional affections, and numerous fearful sufferings, which will probably only terminate in death, to which they rapidly hasten the sufferer.

Hysterocele, or *hernia of the womb*, corresponds precisely with ordinary rupture, the only difference being that the womb descends through the muscular fibres instead of the intestine. It may be produced by violent muscular efforts, by straining and lifting, by blows upon the abdomen in pregnancy, or by any wound or disease which permits th

womb to dilate the part. A case is related by Ruysh, of a woman who had an ulcer in the lower part of the abdomen; this being healed, the part remained weak, so that when she became pregnant the womb descended through it, in a dilated sac of the peritoneum, until it hung down to the knees; yet, at the full period of gestation, this remarkable rupture was reduced by the midwife, and the woman was safely delivered in the natural way. The treatment of hysterocele corresponds with that of ordinary rupture. The protruding part is replaced, and then supported by a properly constructed truss.

Fixture of the womb consists in the organ becoming attached, or growing fast, to some other part. This is usually occasioned by inflammation, so that any cause producing inflammation may result in an attachment of the womb to any part or organ with which its surface is for some time held in contact. This must necessarily lead to much trouble, as it operates to make the womb a fixed organ, or prevents it from shifting its place to the extent required to meet the purposes for which it is intended. When an attachment takes place it becomes fixed in the pelvis. If pregnancy then occurs, it cannot rise with the growth of the fetus. This must necessarily produce much suffering, which will be followed by abortion. If, however, the attachment is not sufficient to prevent it from rising, it will then draw up with it the part or organ to which it is attached. This must also give rise to much pain, and to various derangements the nature of which will very much depend upon the part which is thus displaced. When an attachment takes place in advanced pregnancy, the womb being then high up in the abdomen, the consequences

are even worse; for then, after delivery has been effected, it is either held up, which will prevent it from contracting and give rise to constant flooding, or it pulls down the part to which it is attached, producing derangements the character of which will depend upon the part thus displaced. So that it matters very little whether the attachment takes place when the womb is in the pelvis or the abdomen: in either case, if pregnancy intervene, the result will be very disagreeable, and probably fatal. The attachment, however, may be torn in the effort of the womb to ascend or descend: then the result will probably be a rupture of some blood vessel, hemorrhage, or an abscess, very likely to terminate in death. It is a misfortune, but a fact, that little, if anything, can be done to remove attachments when once formed, which renders it the more necessary that the causes which produce them should always be promptly remedied.

INFLAMMATION OF THE WOMB.

This disease may be either acute or chronic, and may affect the womb in its unimpregnated or impregnated state.

Acute inflammation, in the unimpregnated state of the womb, is not frequently met with, and its occurrence before puberty, though not altogether unknown, is hardly ever heard of. It may vary in the extent to which it affects the womb, being sometimes limited to the proper tissue of the organ, and at others extending to its lining membrane. The causes to which its origin is attributed are suppression of the menses; violence by blows, falls, or otherwise; tight lacing; the wearing of pessaries; the use of strong injections, which are sometimes

employed for the cure of leucorrhœa and other diseases; exposure to damp and cold during the menstrual flow, and especially when overheated and lightly clad. Inflammation in other parts may also occasion it by extending to the womb, and it has been attributed to stimulating food, constipation, to improper care when the change of life was taking place, and other causes. The symptoms attending it are pain in the region of the womb, darting to the groins, back, and thighs, accompanied by increased heat of the skin, and a peculiar sensitiveness of the abdomen so that the touch of the hand occasions suffering; sudden coldness, attended by more or less shivering, or chills; a dry and heated skin over the whole body; a rapid pulse, sometimes hard and frequently sharp; a furred tongue, which appears white and dry; pains in the head; loss of appetite, great thirst, and sometimes nausea and vomiting; swelling and pain in the mammæ; costiveness of the bowels, and distressing pains in the act of defecation; a frequent desire to micturate, the urine being highly colored or red, and scanty, and the effort to void it attended by much distress. The increase in the size and weight of the womb also tends to displace it, a condition frequently detected. When the disease occurs at the time of the menstrual flow the latter is immediately arrested, and if leucorrhœa exists the discharge is suddenly stopped. The disease is always dangerous, though rarely totally uncontrollable; and unless speedily arrested, may lead to chronic inflammation, giving rise to a long train of suffering, to the formation of an abscess, or to softening of the womb, either of which will be almost sure to terminate in death; or to mortification, which may be almost regarded as necessarily fatal.

Acute inflammation, in the pregnant state of the womb, may be occasioned by mechanical injuries to the organ which may be inflicted in many ways ; by exposure to cold, especially shortly after delivery ; by attempts to produce premature labor or abortion, either by mechanical means or medicines ; by injections of cold water or washes to allay hemorrhage, and by other causes. It may affect the whole womb, or be limited to a part, the latter being more frequently the case. It may also be unattended by other difficulties, but it is very apt to be complicated by extending to the peritoneum, the Fallopian tubes, and the ovaries. It may occur at any time during pregnancy, although it more commonly takes place two or three days after delivery, the first symptoms being pain in the lower part of the abdomen, which goes on increasing, and continues without intermission. The womb becomes large and hard, and presents a tumor on the abdomen which sometimes reaches almost to the navel, and is exquisitely sensitive to the touch. The secretion of the milk is suppressed or interrupted, and the lochia cease. Otherwise the symptoms, with but few exceptions, are the same as in inflammation of the unimpregnated womb. The consequences to which it may lead are also much the same, being such as softening of the womb, the formation of abscesses, or mortification.

When the disease occurs previous to delivery, it is apt to affect the fetus, so as to render it restless or turbulent, thus much increasing the suffering of the patient ; it may also prove the death of the fetus, or it may lead to abortion or premature labor ; it may likewise lead to adhesion of the placenta, so that it cannot be removed, cases being known in which it became so firmly attached that no force

which could be safely applied could separate it. When softening of the womb occurs, it is almost sure to be ruptured or lacerated during parturition.

Chronic inflammation of the womb is quite a common complaint. Though not as serious, nor as often fatal, as the acute form of the disease, it is still very formidable and dangerous, and often extremely tedious to cure. It may affect the whole womb, or be confined to its mouth and neck. It may be produced by the same causes that produce acute inflammation. Some temperaments, especially the lymphatic, are peculiarly liable to it. It frequently follows from abortion, because when this happens women are very apt to be imprudent : in a few days thereafter they will go about their business as though nothing had occurred, and in a week or two they begin to experience the consequences in chronic inflammation of the womb. Disordered digestion, living in badly ventilated places, insufficient clothing, cold and exposure to dampness and especially sitting upon damp seats or places, too frequent bathing in hot water, a stimulating diet, excesses, and irregular habits, are all causes predisposing or directly operating to bring about this disease. The symptoms attending it are, in many particulars, similar to those of acute inflammation, though much less severe, and the disease is not so likely to become complicated with other difficulties. There is always a fixed pain in the lower part of the abdomen, with a sense of weight, increased by motion, such as walking, riding, or being jostled in some conveyance, and also by standing long upon the feet, and upon evacuating the bladder and rectum. Dragging pains are also felt in the loins, and any pressure above the pubes will produce pain. The stomach becomes

disordered, the appetite fails, and sensations of heat are experienced over the entire body or in particular parts. The menses become deranged, in some cases being suppressed, and in others increased and containing coagula or pieces of membrane: while between the periods a peculiar discharge sometimes takes place which varies in appearance and in consistence, and is occasionally streaked with blood. The nervous system also becomes affected, and nervous tremblings follow, and the patient becomes irritable, sad, or exhibits other mental peculiarities foreign to her natural characteristics. It may lead to enlargement or engorgement of the womb, to hardening of its mouth and neck, to ulcerations, and, though generally curable, always occasions much suffering and often results in premature death.

Remedies and Treatment.—In acute inflammation the remedies and treatment applicable can be alone determined by the skillful practitioner, and in most cases his utmost attention and skill will be required. Often the means and remedies resorted to are of the most vigorous kind, and can only be rendered available by much skill and judgment. The patient and her friends can do but little beyond seeing that rest and quiet, and proper ventilation of the sick-room, are insured. These are often imperative. There should be no excitement of mind or body of any kind. But little food should be given until after the inflammation is subdued, and nothing of a stimulating nature either as food or drink. The extremities—the hands and feet—should be kept warm, and the patient should not be disturbed nor moved in the least, if possible. Of the milder remedies resorted to, are opening the bowels with salts, or with enemas of warm water, starch,

and castor oil; the hip bath; the vapor bath; anodyne injections, and fomentations, meal poultices, or mustard plasters applied to the abdomen. All these must be applied without moving or disturbing the patient, and even after the inflammation has apparently subsided equal care must be observed to maintain rest and quiet, the least neglect in this respect being capable of again increasing it.

The treatment of chronic inflammation is less difficult, and a cure can generally be accomplished if the proper efforts be made before the structure of the organ has undergone any change. In certain forms of the disease, cupping, leeches, scarification, and active remedies are resorted to, but usually these means need not be called into requisition. All exertion of any kind which affects the pelvic portions of the body, such as continued walking, or dancing, or active labor or exercise, must be avoided; the recumbent posture should be maintained; and if the patient be a married woman, she should live as a widow for a time. The bowels must be regulated so as to avoid constipation, for which purpose Epsom salts, or other neutral saline purgatives, may be employed; but no strong nor violent cathartics must be administered. The hip bath two or three times a week, and sometimes once a day, may be used to advantage, and mild sedatives and tonics are recommended as beneficial and proper to be used at night. Injections may also be used, but the employment of these must depend upon the nature and conditions of the disease. The diet should be nourishing, such as is easy of digestion, and everything stimulating must be carefully guarded against.

OTHER DISEASES OF THE WOMB.
Of some other diseases to which the womb is sub-

ject, a short statement is all that is practicable here, and also all that can be likely to prove of advantage. In nearly all instances, these diseases must be left to the exclusive management of the skillful practitioner. All the instruction that can here be given is simply such as may serve as a guide to the patient.

Hypertrophy.—This is defined as the state of an organ or part of the body in which, from increased nutrition, its bulk is augmented. Hypertrophy of the womb appears to be a permanent augmentation of its tissues. It is often a consequence of chronic inflammation, but may also be occasioned by other causes: a severe kick is said to have occasionally given rise to it. While it augments the organ, it also seems to have a specific effect upon its texture, so that when divided with the knife it appears more firm and generally presents a grayish color. It is often extremely difficult and tedious of cure. In its treatment, leeches, applied over the region of the womb, and some of the more active remedial agents are employed, while the patient is confined to a nutritious and easily digested diet, with the occasional use of tonics, especial care being taken to preserve a proper tone of the intestines.

Engorgement.—This term is principally used to express an over-fullness in the vessels of some organ or part of the system. In engorgement of the womb the vessels of the organ appear to be dilated and enlarged, and it is more or less swollen and its size and weight increased. Engorgement is a consequence of chronic inflammation and of other diseases: it is also attributed to want of exercise, cold, improper diet, constipation, excesses, derangements of the menses, derangement of the circulation of the blood, and other causes. It is some-

times attended by pains in the region of the womb and at others these pains are wanting, while sensations of weight and more or less uneasiness are always felt. It is treated with leeches, cold astringent injections, blisters, tonics, washes, and bathing followed by friction to impart a glow to the surface of the skin, moderate exercise, and a light, nutritious, and easily digested diet. Engorgement is credited with being a predisposing cause of the accumulation of pus and the formation of an abscess, and therefore should be promptly removed.

Induration.—This is a hardening of the womb more frequently confined to its mouth and neck, and usually attended by enlargement, which may be limited to the part affected, or extend in a greater or less degree to the entire organ. It is a consequence of chronic inflammation and other diseases, and is also sometimes attributed to the same cause assigned as capable of leading to engorgement. It is very frequently attended by a peculiar discharge described as "creamy," always by more or less pain, and other symptoms depending upon the extent and position of the induration. It is treated very much in the same way as engorgement. Induration precedes certain malignant diseases of the womb, and it is a question whether it is the cause of such diseases or whether it is occasioned by them; it has been observed, however, that in many cases of induration resulting from long-continued chronic inflammation, cancer and other malignant diseases have been developed.

Ulcerations.—Ulcerations may be of different kinds and proceed from different causes. Most of the diseases of the womb may lead to simple ulcerations: these may vary in size from a pin's head to a dime, but generally they commence by very

small and numerous beginnings, so that they cannot be easily detected, and subsequently coalesce and cover large surfaces. They may also proceed from exposure to cold during menstruation, or from anything that irritates the womb or a part of it, such as astringent injections, or the introduction of a foreign body, as in masturbation and the use of pessaries. The disease is generally preceded by symptoms of inflammation, marked with shiverings and reaction, with fever, accompanied with dull pain and sensations of dragging in the loins; the pains are generally augmented at every menstrual period; and in most instances there is a leucorrhœal discharge, varying in color, but usually yellow and streaked with blood. The treatment must always depend upon the state of advancement the disease has attained, and may consist of cupping, leeches applied locally, the hip bath, tepid injections, the use of laxatives and sedatives, and, under certain circumstances, the application of caustics directly to the ulcers. These ulcerations are always dangerous and demand the utmost attention in their early stages. Ulcerations may also result from syphilis or gonorrhœa, in which case the treatment usually employed in these diseases should be at once resorted to. Then, again, the ulceration may be corroding, in which case there will be but meagre chance of escaping from its fatal effects, or it may be cancerous, and prove equally destructive of life.

Polypus.—This is the name given to a tumor, which generally has a round or oval body and is attached by a neck or stalk, so that it often resembles very much the shape of a pear. Polypi of the womb may grow from the fundus, from the inside of the neck, or from the lower edge of the mouth.

They may vary in size from that of a pea to that of a child's head, and instances are reported in which they are said to have attained a bulk weighing twenty and thirty pounds. Sometimes they are found to be attached by a thick and fleshy stalk, at others by a mere stem, and occasionally they have been found attached by two stalks. They may also be soft or hard, and usually they are solid, although they have been found hollow. They often contain grumous blood, or a gelatinous substance or curdy matter, and an instance is reported in which the polypus was found to contain fat and hair. They also vary in color, being found white, livid, red, and occasionally with a surface streaked with blue veins. They have been divided into three varieties, called the fibrous polypus, the cellular polypus, and the glandulous polypus. The disease is not uncommon, but women of sedentary habits, of lymphatic temperaments, or who live in low and damp situations, are most liable to it. It is also more generally found among women of the middle age and beyond it, although it may affect all ages and conditions. It has been mistaken for pregnancy, for falling of the womb, for inversion of the womb, for dropsy, etc. The causes originating it are but little known, but conjecture has assigned quite a number. The principal symptom attending it is hemorrhage: this may be small at first and gradually become absolutely fearful, being equally great when the polypus is quite small as when it is large. Sometimes the growth of a polypus may be slow, so that it may remain for years without seriously endangering the health of the patient, and at others it may be rapid and terminate in death very speedily unless removed. There is but little to be expected from any medical treat-

ment. The first object is to check the hemorrhage attending it, while at the same time the strength and powers of the patient are maintained by food of the most nourishing kind given in small quantities and at frequent intervals. Efforts may be made to absorb the tumor, but they are almost sure to fail. Sometimes, though rarely, it may be spontaneously ejected, and sometimes, though not much less rarely, medicines may have the effect of producing such a result. Medicines, however, if of little use to effect a cure, may serve to relax the fibres of the womb, if this be not sufficiently done by the hemorrhages, and so prepare the organ for one of the operations which afford the only safe reliance for a cure. These operations are of five kinds: 1 *Torsion*, or *twisting*, in which the polypus is raised and gently twisted round until the stalk breaks, when it is withdrawn: this may be very readily done when the tumor has a slender stalk, and but little or no hemorrhage will follow the operation. 2 *The ligature*, by which a cord is passed around the stalk of the polypus and tied: the ligature is subsequently tightened from time to time, until the polypus separates, which it may do in a shorter or longer time, depending upon the thickness of the stalk. This operation, however, is not always practicable, and may sometimes give rise to inflammation; but where it can be practised it has the advantage of being unattended by any hemorrhage. 3 *Cauterization*, by which a separation is produced by burning the stalk with caustic substances, a means sometimes employed, but generally impracticable. 4 *Crushing*, by which the tumor is crushed or broken. 5 *Excision*, by which the separation is effected with the knife, a mode which is generally favored, being

attended by no danger beyond that of hemorrhage, which can nearly always be obviated. By means of torsion, the ligature, and excision thousands of polypi have been removed, and the operations are not only regarded as perfectly safe but are often alluded to as a great triumph of the surgical art. Generally but little or no pain attends them, because the polypi are endowed with but little sensibility, and are often totally insensible. Sometimes this disease becomes seriously complicated by pregnancy, rendering the operation of removing the polypus extremely hazardous, while if permitted to remain equal hazard may be encountered when the hour of parturition arrives. Such cases often present simply a choice between two evils, and great judgment is required to determine which is to be preferred.

Tumors.—The womb is also subject to several other varieties of tumors, known as hard, fleshy, or fibrous non-malignant tumors. Tumors of this class may develop on any part of the womb and present different forms, being sometimes round and at others angular, conical, or even lobulated. They may grow to various sizes, sometimes remaining quite small, and at others growing to the size of the pregnant womb. Instances have been met with in which they attained a weight of twenty and even forty pounds. The causes to which they owe their origin remain unknown, and we have but little concerning them beyond conjecture. The special symptoms attending them depend very much upon the part of the organ affected, but these are generally central pains, a sensation of weight in the pelvis, bearing down and dragging, and aching in the loins, etc. Very often the existence of the tumor remains unknown until it has attained pro-

portions interfering with the performance of the natural functions. In many cases these tumors may exist for years, without any marked degree of inconvenience, but in the event of accident or injury to them, or of pregnancy, they are very apt to prove fatal; or when small, and so situated as to interfere with parturition, they may lead to abortion, to malformations in the fetus and consequent monstrosities. They are often so situated as to obstruct the evacuation of the bowels or the bladder and thus prove fatal, while a similar consequence may follow from hemorrhages which they may occasion. In the way of treatment but little can be done with this class of tumors, and it is often best to make no effort to reduce them. Sometimes they are so situated as to render excision practicable, and when such is the case this operation may be successfully resorted to. Palliative measures, however, are always attainable. These should be made use of as inconveniences arise. Constant care should be taken to maintain the general health, all chance of accident or injury to the tumor should be guarded against, the dangers of pregnancy should not be encountered, and everything calculated to increase the disease should be carefully shunned.

Hydatids.—The description of the hydatid has been previously given as being “a very singular animal, formed like a bladder, and distended with a watery fluid.” Hydatid tumors of the womb are frequently compared to a bunch of grapes, because the mass consists of numerous apparently separate cells or bladders adhering together. Hydatids, however, may exist singly and be of various forms and sizes, but usually they are found as small oval bodies composed of a membrane which surrounds a white or yellowish watery fluid. The causes assign-

ed as capable of producing the hydatid tumor are simply conjectural, and but very little can be said to be definitely known concerning them. It may make its appearance at almost any time, and sometimes so enlarges the abdomen as to be mistaken for pregnancy. This mistake has been made by some of the most skillful practitioners, some of whom have even been so far deceived as to await the approach of labor, only discovering their error in consequence of having waited in vain. But little can be recommended in the way of medical treatment beyond the employment, in particular cases, of such means as may be calculated to expedite the expulsion of the tumor. Usually this expulsion occurs spontaneously after the tumor has reached a certain stage, and sometimes bears such a close resemblance to actual labor, and is followed by consequences so similar to those that succeed an actual birth, that the patient herself cannot be induced to believe that she has not given birth to a child until the expelled mass is shown to her. So marked are these resemblances that the expulsion of the hydatid has even been mistaken for an abortion by the skilled practitioner. Sometimes also the tumor will be suddenly diminished or pass away by breaking or busting, an occurrence which is attended by a copious discharge of a watery fluid from the vagina. Although the hydatid tumor is usually expelled or passes away spontaneously, such is not always its fortunate termination. It has been known to terminate in fatal floodings, or to so affect the constitution as to produce speedy death. It has also been known to exist for years without seriously impairing the health, and then pass suddenly away by expulsion or bursting, and then, again, after having remained for a long time, it

suddenly gave rise to serious and fatal complications.

Hydrometra.—By this term the disease commonly called *dropsy* of the womb is indicated. When dropsy attacks the womb there is a slowly and gradually increasing swelling of the hypogastric region, resembling the figure of the womb and yielding or fluctuating under pressure. Sometimes the swelling increases to such an extent that it far exceeds in size the natural dimensions of the full period of pregnancy, and cases are reported in which the quantity of fluid accumulated was enormous, even exceeding eighty pounds in weight.—Dropsy of the womb is said to be of seven varieties, but the disease is very rare—so rare, in fact, that the observations made upon it are neither extended nor precisely accurate. Its existence is often ascertained with difficulty, and, as it is more particularly, though not exclusively, confined to married women, its close resemblance to pregnancy renders its determination still more difficult. The disease cannot be pronounced especially dangerous, and sometimes very simple treatment will expel the fluid; at others it becomes necessary to remove obstructions in the mouth of the womb so as to admit of its escape; and at others, still, some obstructing membrane must be punctured. The removal of the fluid, however, does not generally prove a cure, for it is very apt to return again.

Calculus.—Calculi, hard concretions or stones, very similar to those found in the bladder, are sometimes formed in the womb. Of the causes to which these singular formations, in such an organ as the womb, are due but little can be said beyond that they have been the subject of some speculation and dispute. Stones are formed of different degrees

of hardness and of different sizes. Some have been found “so hard as to admit of a polish,” and others no harder than ordinary chalk. While they are usually small, weighing but a few grains, cases are also reported in which they had attained a size exceeding five pounds in weight. Calculi have existed in the womb during a life-time without interfering with the general health, or without their existence being even known; and then, again, they have produced dangerous and fatal consequences. Sometimes they may be spontaneously expelled, or medical treatment may serve to bring about their expulsion. When this fails, they can generally be removed by mechanical agencies.

Cancer.—This malignant tumor is supposed to have been named the cancer by the ancients because it exhibited large blue veins bearing some resemblance to the claws of a crab. By the Romans it was called *lupus*, because it eats away the flesh like a wolf. Though cancer of the womb is not a very frequent disease, it is still more frequently met with than is generally supposed. The causes by which it is produced are unknown, and numerous theories and speculations have been indulged in to account for it. It has, however, been observed that women of lymphatic temperaments are more liable to it than others; that chronic inflammation may linger on for years, and then terminate in cancer; and that anxiety, bad and indigestible food, unhealthy situations, and other causes, may predispose the system to an attack of the disease. It has also been observed to be transmissible, so that it is pronounced to be hereditary. It was formerly regarded as contagious, but this is now pronounced an error. Its termination is fatal, and before it reaches this point it occasions the most fearful suf-

ferings. Almost every conceivable means have been resorted to with the hope of mastering this formidable disease, but these have resulted in but limited success. When discovered in its commencement, and at once subjected to proper treatment, there is a very fair probability of a cure, but if permitted to advance beyond its first stages, not only does a cure become almost hopeless, but it will have acquired so firm a hold that but little can be done to mitigate the sufferings of its victim. A knowledge of the first symptoms attending it may therefore become important: these have been described as "slight and transient attacks of pain, or perhaps simply sensations of uneasiness, referred to one or other iliac region, or in the situation of either ovary, there may be a decided fullness or a distinct tumor tender to the touch, or the pain may be referred to the mouth of the womb, accompanied with tingling sensations along the front and inside of the thighs, lasting for a few hours or days, and then disappearing, absenting itself for weeks, and then returning. Occasionally sexual congress is attended with pain, and followed by a slight show of blood. Generally there is some slight irritability of the bladder, and frequently the irritability about the rectum and anus is of such a nature as to cause the patient to suspect she has piles. But little or no change is experienced in the general health until the disease has progressed for some time. An examination shows the edge of the os uteri to be hard, sometimes fissured, and of irregular form, projecting more than usual into the vagina, and reveals the existence of small, hard, and defined projections, like grains of shot or gravel, under the mucous membrane, which, if firmly pressed, will occasion pain and sickness."

In this condition the disease may sometimes linger on for years, and at others speedily progress to ulceration and to death.

Excrescences.—The womb is also subject to certain peculiar growths called excrescences. This growth has been described under the names of *vivaces* and *cauliflower excrescence*, because of the resemblance which its uneven surface bears to that of the cauliflower. It consists of a very vascular tumor, resembling flesh in color, having a granulated surface, and being covered with a fine membrane which copiously secretes a watery fluid. The excrescence generally grows from the mouth of the womb, but occasionally proceeds from its cavity, and may even attain such a growth as to project through the external parts. Females of all ages and temperaments may be attacked by this disease, and many causes have been assigned as capable of producing it, but none that is sufficiently marked to be accepted as having this specific effect. Its symptoms, however, are very distinct, consisting in an unusual moisture in the external parts, which continues increasing until it soon amounts to a discharge sufficient to moisten several napkins during a single day. At first the discharge is simply streaked with blood, but as the disease progresses hemorrhages soon succeed, often becoming the immediate cause of death. The effects of the disease upon the general health soon become visible in various ways, rapidly prostrating the patient and leading to a fatal termination. The treatment is directed towards lessening the watery discharge, reducing the size of the tumor, and preventing or checking the hemorrhages, and consists mainly of strong astringent injections which must be so gently applied as not to bruise the tumor and thus

bring on profuse bleeding. All mental or physical excitement must be avoided, the diet must be nourishing but free from stimulants, the bowels carefully regulated, and every effort made to support the system against the continual drain attending the disease. Sometimes it may become advisable to remove the tumor by the ligature or knife, an operation which may, under certain circumstances, be successfully accomplished, and without producing much pain, the tumor being endued with but little or no sensibility ; but, the operation is not certain of producing a cure, for the excrescence is apt to grow again as often as it is removed. When the disease eventuates in death, an examination reveals nothing of the excrescence beyond a mass apparently consisting of empty vessels, the tumor having disappeared : a corresponding effect also follows the operation of the ligature. When the disease becomes complicated by pregnancy, abortion or premature labor generally takes place, although parturition at the full period may occur without being seriously impeded, the great danger attending it being profuse or fatal flooding.

GENERAL SYMPTOMS.

Diseases of the womb, the most prominent of which have been noted, have been the great source of female suffering in civilized communities. This must necessarily continue to be the case, until the primary laws of health shall be so observed as to secure that natural development of every organ of the body which is essential to the uninterrupted and healthful performance of all its functions. The many artificial and social causes to which the neglect of these laws has heretofore been due will, however, continue to lead to renewed developments

of disease and suffering ; and while those instructions of the physiologist which are designed to prevent disease will be principally unheeded, when the hour of suffering arrives the means of relief will be anxiously sought after. It is then that the following enumeration of the general symptoms attending those diseases which directly affect the womb will be read with care and become practically useful to the many, while to the more judicious few they may be of some value as illustrating the importance of exercising the caution required to avoid them. This enumeration of general symptoms is extracted from a British prize essay. A certain number of these symptoms will always be exhibited in diseases directly affecting the womb

“The commencement of diseases directly attacking the womb is frequently latent, and takes place almost insensibly. At first there is usually an increase of the mucous secretion from the vagina ; frequently the menstrual periods last longer, while the intervals are less ; not uncommonly there is slight hemorrhage after connection, which is attended with a more or less acute pain ; or the discharge may supervene after long continued exercise, especially on foot.

“The mammae sympathize with the womb, and become enlarged. The erect posture, and especially walking, becomes painful and irksome, from a sensation of dragging at the loins and pit of the stomach ; and in process of time there is uneasiness and pain at the groins and upper part of the thighs. The menstrual derangement becomes greater, and is attended with pain and a sensation of heat ; and coagula are occasionally passed with the catamenial secretion. Although pain and heat are complained of, the monthly secretion becomes more

scant, or is altogether suppressed; this may last for a longer or shorter period, but is frequently followed by copious flooding. As the flooding ceases, its place is supplied by a discharge varying in color, density, and nature; it may be thick, purulent, yellow, or greenish; it may be watery; it may be whitish and milky; or it may be sanious, reddish, or brownish. This discharge may irritate the parts over which it passes, or it may excite no irritating action; it may be devoid of smell, or it may be foetid. As the discharge increases the pains generally increase in intensity; they are usually referred to the pelvis, and thence are said to spread over various parts of the body. These pains may be dull and heavy, or they may be lancinating, sharp, and burning; they may be constant, or they may occur periodically, increased by any inordinate excitement of mind or body, and by any thing which has a tendency to determine the flow of blood to the pelvis, especially sleeping upon a soft feather bed. As the disease advances in the womb, particularly where its volume is increased, a variety of morbid symptoms is complained of; dragging in the loins and in that part of the abdomen which lies under the cartilages of the false ribs; a sensation as of a ball in the vagina; constant desire to micturate, and to evacuate the contents of the rectum, although the attempt is not followed by success, accompanied with hemorrhoids, which greatly increase the patient's distress. All these symptoms naturally result from the increased weight and volume of the womb, and will be found to accompany simple engorgement, as well as enlargement of the womb from polypus or tumor. The abdomen becomes enlarged, arising in some instances in part from the increased size of

the womb, and also from the disengagement of flatus, the result of derangement of the digestive functions; the appetite becomes capricious; there may be occasional vomiting; the patient's temper changes; she becomes irascible, and jealous of contradiction. The symptoms do not long remain local; the constitution soon sympathizes; febrile symptoms, with a periodical increase in them at night, evidence themselves; the patient becomes attenuated and feeble; the face loses its color, becomes sallow, or rather has a peculiar yellowish tinge; the features are sharp; there is a dark areola around the eyes; the eyelids become puffy and exhibit a dropsical swelling; the skin is harsh; the evacuations take place with more difficulty, and are attended with greater pain, and when passed there is generally an increase of discharge from the straining that takes place. At length the countenance becomes more sunken, the eyes more hollow, and the powers more prostrate, the vomiting constant; the diarrhoea is unconquerable, and the patient dies completely exhausted."

AFFECTIONS OF THE OVARIES.

These organs are subject to certain diseases corresponding very much with similar diseases of the womb. Of these, inflammation and dropsy may be practically noticed here. Ovarian diseases may be regarded as confined to that period of female life commencing from the time of puberty and ending with the cessation of the menses.

Inflammation.—The ovaries are apt to become inflamed from derangements of the menses. They are also peculiarly liable to inflammation shortly after delivery. The same causes that tend to produce inflammation of the womb are also assigned as

producing it in the ovaries. In the performance of their functions the ovaries are constantly active, and they are capable of great excitement by artificial means: the performance of their functions may be interrupted and inflammation produced by causes creating a morbid activity in them; therefore excesses, or medicines possessing a peculiar action, are frequently suspected as the causes of ovarian inflammation. The symptoms attending the disease are pains in the groins (or in one groin only if but one ovary be affected), darting over the abdomen, and sometimes extending to the thighs and lumbar regions; small round swellings in the groins, which enlarge as the disease progresses, extending over the abdomen and becoming exquisitely sensitive to the touch, even to that degree that pressure gives rise to spasmodic contractions in the lower limbs; difficulty of micturation and defecation; the general system exhibits nearly the same symptoms as in inflammation of the womb; and finally, suppuration ensues, an abscess is formed, and the pus is discharged, this event being usually preceded by chills, fever, and severe throbbing pains in the tumor: in this case the tumor generally adheres to some other part, such as the womb, rectum, bladder, or external integument, so that when the matter is discharged it escapes by the vagina, by stool, by urine, or by an external opening in the walls of the abdomen. This discharge of the morbid matter may lead to a favorable termination of the disease, but not unfrequently it ends in the death of the patient. The treatment consists in the application of leeches and poultices, warm injections, warm baths, saline purgatives, and in perfect rest and an unstimulating diet. The curative efforts must be directed to the reduction of the in-

flammation. Sometimes the inflammation commences and lasts for a week or ten days and then subsides, and at others it becomes necessary to use the most vigorous means to effect its reduction. Even then a failure is not improbable and an abscess may form, rendering it expedient to open it surgically and facilitate the external discharge of the matter. Great difficulty is often experienced in the treatment of this disease, and in spite of all efforts it may terminate in gangrene, or in cancerous ulceration, and in death.

The acute form of the disease is liable to lead to chronic inflammation, subjecting the patient to many annoyances and sufferings before a cure can be effected.

Dropsy.—This is an accumulation of fluid in the ovary. This fluid is sometimes limpid and thin, at others discolored and gelatinous, and is sometimes contained in one sac, often in several, and at others the whole tumor has been found composed of separate sacs, or hydatids, adhering together. The time required for the development of these tumors may consist of days or of years, cases being known in which the disease lingered for more than half of a long life-time; and the quantity of fluid that may be contained in them may be limited or enormous, instances being recorded in which the quantity contained in the tumor amounted to ten and twelve gallons, and it is even said that "so large a quantity has been drawn off from a patient by the operation of tapping, that the fluid has been placed in one scale and the patient in the other, and the former has preponderated." The active causes by which the disease is produced are but little comprehended, but it has been ascribed to all the causes assigned as producing inflammation of the ovaries.

The symptoms attending ovarian dropsy are at first generally very indefinite—usually they are very similar to those of pregnancy, such as suppression of the menses, swelling of the abdomen and breasts, uncertain appetite, &c. It is therefore often mistaken for pregnancy, generally from ignorance on the part of the female, and by the physician because he must usually take the description of its first appearance upon trust—that is, from the patient herself. The time for the duration of pregnancy, however, passes by, and still the tumor increases. It usually commences on one side of the abdomen (unless both ovaries are affected) and from thence extends all over it, is generally, though not always, movable, and changes to some extent with the change of position of the patient when lying down. In some cases it may be felt in balls or lumps, situated deeply in the pelvis, and gives rise to some pain, and in others it will be smooth and painless, upon moderate pressure. Although the disease may sometimes continue for years without danger to the general health, it always produces inconvenience proportionate to the increase of the swelling. When the tumor becomes large, there will be a constant feeling of weight and dragging down, it will press upon other organs or parts, such as the womb, bladder, intestines, and even upon the stomach and diaphragm, impeding the natural performance of their functions, rendering breathing difficult, and frequently displacing the womb. At length, however, the constitution becomes affected, the patient loses flesh, the system becomes exhausted, and death finally ensues. This course is frequently run in a very short time—the duration of the disease and the manner of its termination being always uncertain. The treatment of ovarian drop-

sy has but little in it that can be recommended as specifically useful. It is always desirable, however, that every means should be employed to preserve the general health. All other efforts must be regarded as to a large extent simply experimental—they may succeed and they may fail. Sometimes the disease will disappear of its own accord, and at others the sac may break and the fluid may harmlessly escape, but these are rare and exceptional occurrences. Remedial efforts have been mainly directed to prevent the increase of the tumor, and when, in spite of these efforts, its size finally became so augmented and the abdomen so distended that the patient could bear it no longer, the operation of tapping has been resorted to. This removes the fluid, but unfortunately it will return again. "You tap the patient," says a high authority, "and the abdomen becomes flat and flaccid; but it fills again; and every succeeding time you draw off the fluid a greater quantity is evacuated, and a less space of time elapses between each operation. The constitution becomes debilitated and the health more disturbed. Irritation from the puncture may extend to the sac, and produce inflammation there, attended by a heated skin, a tender belly, and a quickened pulse: to subdue these symptoms the patient's constitution is further reduced. On the next tapping the fluid is mixed with pus. At last there is an attack of inflammation, which is fatal; or the patient dies from irritation and exhaustion." Tapping has been followed by almost instant death, and it has frequently shortened life; but, then, it has also sometimes produced a cure, and in thousands of cases it has prolonged the life of the patient. Cases are on record where it was repeated many times and immense quantities of fluid re-

moved—one case of dropsy being given in which the tapping was repeated one hundred and fifty-five times, and over seven hundred and fifty gallons of fluid drawn off.

Foreign substances in the ovaries.—Rare cases have occurred in which very singular foreign substances were found in tumors connected with the ovaries, such as hair, bones, teeth, and other strange formations. How these may originate remains a mystery, but it has been conjectured that they may result from an imperfect conception, or from a morbid development of the vital principle in the ovum, which, from some unknown cause, may take place at the ovary. Another conjecture is that several ova may exist in the womb and be impregnated; that one may grow to a perfect fetus, while the other, in a state of partial development, may become included in some part of the perfect one, and that this part may be the ovary; and that after the perfect one is fully developed and the child is born, the included fetus may remain in the ovary for years and be afterwards discovered, just as such formations have been found in various parts of the body both in the male and female child, and in persons who had attained to full maturity. These conjectures, however, have led to no definite information, and it may therefore be said, that we know but little concerning such formations beyond the fact that they do sometimes exist.

Extirpation of the ovaries.—The obstinate and often fatal character of ovarian diseases led to the idea of removing the affected ovary. This has been successfully accomplished, but of numerous operations of this kind so few have been fully successful, and so many have been fatal or followed by such

meagre results, that the operation has very little to recommend it, and much to forbid it.

AFFECTIONS OF THE OVIDUCTS.

The affections to which the oviducts or Fallopian tubes are subject correspond with similar affections of the womb and ovaries, giving rise to the same symptoms and requiring the same treatment. Being connected with the womb and the ovaries the diseases of these organs are very apt to extend to the tubes, and in the early stages of disease it is sometimes very difficult to determine in which part it is located.

CHAPTER XVI.

VENEREAL DISEASES.

THE term venereal is usually applied to those diseases which result from sexual intercourse—such as are produced by actual infection. These are generally included under two heads—*gonorrhea* and *syphilis*. Considerable interest has heretofore been excited by efforts directed towards determining the origin of the more fatal of these two diseases; but, after all, very little can be definitely said concerning it, and we must continue to remain content with the general statement, that it has existed so long that “the memory of man runneth not to the contrary.”

GO NORRHEA.

This is the disease commonly called the *clap*, and although the name of *gonorrhea* may be misap-

plied, it has been so generally used in this sense that custom has assigned to it this specific meaning. Gonorrhea, then, is defined as an affection of the mucous membrane of the urethra, resulting from contagion, and attended by a discharge of matter resembling pus, with heat of urine.* The disease is essentially an affection of the mucous membrane, and to contract or take it from an infected person, it is necessary that the gonorrheal matter should come in contact with the mucous membrane lining the urethral canal—simple contact with the outer surface or integument of the organ being insufficient to breed the disease. The manner in which this contact is effected in an impure coition is thus defined: by the dilatations and contractions of the urethra, through which the ejection of the seminal fluid is in part accomplished, a vacuum is occasioned in the urethra at each dilatation in consequence of which the infectious matter is drawn into it. It has been observed that while all persons are capable of being thus infected, some are peculiarly susceptible to the disease, and that while the same infectious matter may cause gonorrhea in its most violent form in one person, in another it will

* A species of gonorrhea may result from contact with the matter discharged in leucorrhœa, which is sometimes, though rarely in comparison with the prevalence of that disease, infectious. Some other female diseases are also said to so affect the secretions as to generate a like disease when brought into contact with the male organ. Then, again, a number of very common causes are assigned as capable of producing a gonorrhea, so that it is regarded as occasionally arising spontaneously in the male and frequently in the female. It therefore follows that while the existence of gonorrhea is generally due to infection with gonorrheal matter, it is not always a proof of licentiousness.

exhibit itself in its mildest form only: to account for these facts, the habits, diet, mode of life, and constitutional peculiarities of the affected person are assigned as reasons.

After infection has been conveyed, the time in which the disease will show itself may vary considerably. Sometimes it will do so in two or three days, at others in six or seven, or not till nine days have passed: the time in which it usually makes its appearance, however, has been stated to vary from six to fourteen days; when it appears earlier or later the cases may be regarded as exceptional. Its commencement is sometimes characterized by symptoms affecting the general system, but usually its symptoms are merely local, the first indications of the disease being manifested by a slight uneasiness in the urethra, by a sensation of tightness, or of itching, or of heat in the glans penis, or of soreness and tingling along the whole course of the urethra. This is soon succeeded by the appearance, at the urethral orifice, of a whitish adhesive matter and a somewhat pungent sensation attending the discharge of the urine. In a few days the discharge of the matter will be increased, and it may vary in color—being gray in some cases, and in others of a yellowish, pinkish, or greenish hue. Its consistence may also vary, but it generally becomes thinner than when it first appeared, and is not so adhesive. It often happens that the symptoms preceding this discharge of matter are so slight that the existence of the disease remains unknown to the diseased person until this discharge occurs. When it has once commenced it may take place in some quantity at intervals, or the running may be more or less constant, and it is very apt to exhibit some increase in the morning in conse-

quence of the urethral orifice having been sealed or glued up during the night. It is a common practice to test the existence of the disease by pressure of the organ, such pressure being attended by the appearance of matter at the orifice. Usually this matter has a strong odor and becomes offensive unless strict cleanliness be observed by repeated washings.

The disease is attended by inflammation, and unless its progress be arrested, this may produce a variety of symptoms, of which the following may be enumerated :

Swelling of the urethra : The inflammation very soon so affects the urethral canal as to produce a contraction in it, so that the flow of the urine is obstructed, its discharge being effected in a diminished stream, and accompanied by pain and scalding heat. The inflammation may be inconsiderable, or it may prevail in a high degree, and the pain attending the discharge of the urine may be slight, or so acute as to cause great suffering and even occasion cries of agony and fainting. The pain is usually first experienced at a short distance from the orifice at the glans, although it may sometimes extend all along the course of the urethra. The swelling may also become so great as to close the urethra entirely, so that the urine cannot pass through it.

Swelling of the glans : The inflammation generally manifests itself by a redness of the parts, often so affecting the glans that it has been compared to a "ripe cherry." The orifice of the urethra becomes swollen and so excessively sensitive and tender that even contact with the clothes will occasion much pain. This swelling may affect the entire glans, and give rise to much distress.

Swelling of the prepuce : The effect of this has been thus described : "In consequence of the inflammation, the prepuce likewise becomes often so swelled at the end, that it cannot be drawn back, which symptom is called a phymosis; or that being drawn behind the glans, it cannot be returned, which is known by the name of paraphymosis." These conditions may necessitate an operation to obtain relief.

Hemorrhage : In consequence of the inflammation some of the small blood-vessels may sometimes be ruptured, so that great alarm may be occasioned by the voiding of blood. This is generally small in quantity and produces no serious consequences, although it has been known to occasion considerable relaxation in the patient.

Chordee : In consequence of the inflammation having closed some of the cells or vessels, the filling of which with blood produces the phenomenon of erection, that phenomenon can occur but partially; that is, the obstructed portion of the organ cannot be erected, while the remaining parts, becoming filled with blood, enlarge and swell : this necessarily prevents the straightening of the organ, and crooks or curves it one way or the other, producing the condition known as chordee. This condition gives rise to great pain and suffering, and is one of the worst sources of torture that accompanies gonorrhea; and as the disease seems attended by a stimulus, especially when the patient is warm in bed, tending to frequent erections, chordee becomes often very troublesome and inflicts immense suffering.

Adjacent parts : Sympathetic uneasiness or pains may be felt in other parts, such as the testes, the perineum, or the groins. Although these

symptoms may sometimes be slightly felt in the beginning of the disease, they are not usually experienced until after the commencement of the discharge, and sometimes not at all. Being the consequences of the inflammation, in proportion to its extent or violence will be the extent or violence of these symptoms, sometimes producing the most excruciating pains, which extend from the seat of the disease to the back, or give rise to heat and fever and constant restlessness. The glands of the groin may become indurated or enlarged by swellings: these may be large or small, are often very painful, and have been known to gather and break. The irritation may also extend to the bladder, producing a frequent desire to micturate, which is always greatly dreaded by the patient because of the pain attending it. That which is to be most dreaded, however, is swelling of the testes, not only on account of the fearful pains that attend it, but also because it is a very dangerous complication.

Sometimes gonorrhea will begin, and after exhibiting a few of its symptoms, pass off again, so that no more will be seen of it. By what agency such spontaneous cures are effected is not known: it occasionally happens in such cases that some disease breaks out in another part of the body, so that it has been supposed that gonorrhea may be shifted from one place to another; but this is not now regarded as at all probable. The more general course of the disease, however, is quite different, so that it may be given as a rule, that gonorrhea, if not irritated by the mode of life, habits, or diet of the patient, will pass through its ordinary symptoms in a shorter or longer time—usually in from two to three weeks—when the inflammation and scalding will gradually disappear, and the dis-

charges be less frequent, and from having been thin and discolored, will become thick, white, and perhaps of a ropy appearance. This condition is then called *gleet*, and may continue for a long time.

Very frequently, however, the disease continues a much longer time—for weeks or months—especially where the patient has lived high, and indulged in stimulating food and drink, and in other excesses; and when it finally passes off, it will be found to have given rise to one or more permanent strictures of a troublesome and dangerous character.

Cases have also occurred where the disease has disappeared and then reappeared again from time to time, either with the change of seasons or after any imprudence on the part of the patient; so that the person was said to have periodical gonorrhea.

In some cases little hard swellings may be produced on the lower surface of the organ, along the course of the urethra, and these may possibly suppurate, and even form into fistulous sores.

When the disease has been of long continuance, and cleanliness neglected, warty excrescences have been occasioned at points where the matter had fallen or lodged, and these often proved very annoying.

It may be added here also, that sometimes the matter has been conveyed to the eyes by some means which were not always discoverable, in a short time producing great inflammation, and in some cases causing a total loss of these organs in less than one week.

Remedies and Treatment.—The treatment of this disease is often spoken of as being very simple, and yet the number of those who have fallen victims to its evil consequences is almost countless.

When the disease is in its incipient stage, or when it is limited in extent, no physician should fail in effecting an immediate cure, for it is then almost always instantly controllable, and needs hardly ever lead to any of its consequences. If it has been neglected prior to the commencement of the treatment, a cure becomes more difficult, it is more likely to lead to complications, and will require all the assistance and care that the patient can give. It is sometimes supposed that no harm can follow from a little neglect of the disease, and some have even entertained an idea that its continuance for a time was beneficial—errors which not unfrequently have led those who entertained them to fearful results. It should be an invariable practice to stop the disease at once—in its very beginning. In this alone there is safety.

In the treatment of gonorrhea much will depend upon the patient himself. The evils of the disease result from the inflammation that attends it. By keeping down the inflammation, or subduing it when it has begun, the disease will probably speedily disappear; or, at all events, it will not become complicated. It is therefore necessary that the patient should be careful in his diet. He should eat nothing that can irritate or stimulate—strong meats, salt, spices, and food of hard digestion should be avoided. The food should be of a nourishing kind, regard being mainly had to its irritating or stimulating tendencies. It may sometimes be advisable, when the inflammation is violent, to reduce the system to some extent, although this is rarely necessary, and, if the gonorrhea has continued for any time, even improper; for it may then become necessary to support the system against the depleting or reducing effects of the disease. No stimulating fluids of any

kind should be used. Cold water is the best drink always, notwithstanding the repute which gin and some other beverages have erroneously acquired. Gum-water, barley-water, and diluents of a similar kind, are always harmless, and sometimes, when the urine is very saline, they are greatly beneficial. Frequently, after exposure to the disease, prudence in living will prevent it from making its appearance, so that it is believed that the infectious matter is often absorbed without being followed by gonorrhea; while imprudence in eating, drinking, and fatiguing exertion are sure to develop it: so strong is the influence exercised by the habits of the individual. Next to care in the diet, especial attention should be paid to cleanliness, and to frequent washings with castile soap and water; this should never be neglected, and should be practised at least three times a day. Warm water should be plentifully used when swelling of the glands and prepuce occurs—under other circumstances cold water is to be preferred. The bowels may be judiciously regulated by castor oil and salts. Heavy labor or exercise should be put aside for a time, and rest and quiet maintained—for which the recumbent position is especially appropriate, if that be possible. When rest cannot be maintained, or labor is imperative, it is often advisable to use proper supports for the parts. Exposures to cold must be guarded against, and all dangers from that source avoided.

For internal medication the best remedies as yet known are copaiba (the balsam of copaiba) and cubeb. In the use of these the doses should be such as the peculiarities of the patient may indicate, and the remedies should not be discontinued until several days after the disease has evidently disap-

peared. It sometimes happens that the gonorrhea is considered cured, and the remedies are discontinued, but in a short time it will return again, and require renewed treatment.

Of the copaiba, the dose administered has been as little as one dram, and as much as eight drams. The average dose is from two to five drams, which is taken twice a day. There are, however, some exceptional constitutions in which this remedy becomes impracticable, in consequence of its producing vomiting, or much griping, which may result in inflammation of the stomach or bowels; and others in which it affects the nervous system, and may result in paralysis or apoplexy—but such exceptional cases are rare. The continued and free use of copaiba may also produce an eruption, in some cases, over the whole body, resembling measles, accompanied with fever, headache, and foul tongue; but these effects are rare, and generally disappear upon discontinuing the medicine. Their disappearance may be expedited by saline purges, attention to diet, and guarding against exposure. The use of the copaiba may be continued for several weeks, except in the few cases in which it may be attended by symptoms indicating its impropriety, or where it evidently seems to do no good.

Of cubebs the average dose is from two to three drams, which may be taken two times a day. This dose may be judiciously increased in such cases as indicate the propriety of it; but where the medicine produces any unpleasant symptoms in the stomach it must be immediately discontinued.

These preparations are put up in form convenient for use, known as *capsules*, and may be obtained almost anywhere.

Of the numerous remedies devised for this dis-

ease a few may be given here, because they may, in some cases, be found practicable, or serve as a source of information.

1. Take powdered gum Arabic and white sugar, of each two drams, mix them well together with one ounce of water, and add two ounces of balsam of copaiba, one ounce of sweet spirits of nitre, and two drams of compound spirits of lavender. Mix the above until they are well incorporated with each other, then add five ounces more of water. Mix. Dose—a tablespoonful four times a day. This has long been known as Chapman's Mixture.

2. Take of balsam copaiba, syrup of tolu, each half an ounce; liquor potass., two drams; powder of gum Arabic, one ounce; cinnamon water five ounces. Mix. Dose—two large spoonfuls three times a day. This has been known as Jeffries' Antidote.

3. Take an ounce of gum guaiacum, two ounces of copaiba, two drams of oil of sassafras, and half a pint of ætherial alcohol. Dose—one teaspoonful four times a day. This mixture has been known as the Jesuits' Drops, and had at one time considerable reputation.

Injections may also be found of service, and many practitioners place their main reliance upon them. They are used by means of a syringe: this is partially filled with the injecting fluid (being made half or two-thirds full), after which its point is gently but fairly introduced, and the fluid is injected with a very slight degree of force, into the urethra. There is no danger attending the mechanical operation of injection if properly performed, and it is an error to suppose that the fluid will be thrown into the bladder, or that it must necessarily result in injury to the testes and other organs: the dangers connected with it consist in its improper performance and in the character of the fluids injected. In consequence of a very high

degree of inflammation, injections are sometimes impracticable for a time, and whenever they are employed the necessary means to reduce or prevent inflammation must not be neglected. Of the injections recommended, the following may be considered as superior in efficacy to most, and equal to any yet employed for the cure of the disease :

INJECTION.—Take pulverized opium, sugar of lead, sulphur of zinc, and pulverized gum Arabic, of each *fourteen grains*, and add to these *six* ounces of distilled water. (A stronger preparation may be made by using an ounce or two less of the water, and a milder one by using an ounce or two more.) Mix, and shake before using. Inject so as to reach the seat of the disease, four times a day, or oftener, and hold the injected mixture there for a little while. The object being to keep the mixture in contact with the affected part as much and as long as possible, the injection should be renewed whenever it is washed away by the urine. Whenever this injection is properly used, in connection with capsules, or such efforts as are designed to prevent or mitigate the inflammation, a cure is generally very probable, and when used in the beginning of the disease a cure is very generally certain. It is also applicable as a wash for external excoriations, sores, ulcerations, excrescences, etc., which, from a want of cleanliness, are sometimes occasioned by contact or lodgment of very acrid gonorrheal matter.

If hemorrhage should occur, and the bleeding become profuse, the patient must be placed upon his back, and cold water should be diligently applied to the parts. Bandaging the organ tightly, which is known as compression, may also become necessary to check the bleeding, and sometimes the urethra must even be plugged with the proper instrument or catheter.

If chordee occurs during the existence of the gonorrhea, which it is very apt to do when the inflammation becomes great, or when the regimen is

not guarded, the free application of cold water will be found serviceable; cold in any form will serve to restrain the morbid excitement, while heat will tend to augment it. The chances of its recurrence may also be lessened by keeping a proper control over the thoughts, by shunning the society of females, by avoiding all exciting reading or conversation, by remaining in doors, and by discarding over-warm wearing apparel and bed clothing. Drugs and other means are also sometimes resorted to, but they have very little to recommend them.

If swellings occur in the groins, and fail to gather and break, or refuse to subside, and prove painful, leeches may be applied, or warm fomentations and poultices may be employed. It may sometimes become practicable to use the knife, and so effect a speedy discharge of any gathering, and facilitate the disappearance of the swellings.

If the urethra becomes closed in consequence of the swelling, or if spasmodic stricture occurs, hot fomentations or poultices may be tried, but, most likely, resort must be had to the catheter to relieve the bladder.

If swelling of the testis occurs (which swelling is usually confined to one of the organs), the consequences are more serious. This complication may take place in the early stage of gonorrhea, but it seldom does so; and when it does occur, it is usually after the disease has progressed five or six weeks; but it may also happen much later, so that it may be said to be liable to take place at any time. The cause which directly leads to it, is the inflammation of the urethra, but other things may predispose to such a result: of these may be instanced, much fatigue, in consequence of labor or exercise, and especially in those who have the scro-

tum much relaxed; exposure to cold, damp or too much wet weather; and improper living and indulgences. The symptoms indicating its appearance are, pain in the groin and perineum, which soon affects the scrotum, and is attended by a little, hard, and painful swelling on the testis, which, if pressed, will probably give rise to pain extending to the groin. Soon the swelling increases, the pain becomes severer, and at last excruciating. Then there will be emissions at night, which may be more or less tinged with blood, the stomach and bowels will be disordered, fever will follow, and the whole constitution will be affected. Finally the swelling will extend through the whole testis, so that it will be destroyed by bursting, or lose all its powers and functions by becoming hardened. If, in the way of treatment, the patient will, right at the time when the swelling first begins, be strictly careful and sparing in his eating and drinking, if he will keep carefully at rest within doors, or upon his back, if he will open the bowels and keep them free, and if he will plentifully use cold water on the parts, then the probabilities are that the difficulty will end, or advance no further; but if he will pay no heed to these things, it will soon progress so far that all his efforts will be vain, and he must expect to lie long upon his back, to be bled, leeches, or scarified, deluged with water, poulticed, physicked, starved, and finally have the parts compressed: and even then, after having undergone numerous fearful sufferings, he may be regarded as fortunate if the skill of his physician will have brought him full relief and restored the part to perfect health.

If the gonorrhea be not cured, so that it ends in et, the^a may be annoyance and trouble which

may last for years or during life, for many cases are known of its duration until the patient died, after having had it for thirty or more years. The urethral running in gleet is, however, free from inflammation and scalding, and is much less than in gonorrhea. The matter resembles more the natural mucous secretions, and in some cases a portion of it escapes during the day, in others only in the morning, and in others still it only does so at longer or shorter intervals and resembles thin threads of mucus. Where gleet exists it often happens that the gonorrhea will return again; chordee, suppression of urine, or spasmodic stricture may also occur; and any slight exposure or imprudence may lead to these or other annoyances. Permanent strictures, also, frequently follow from a gleet. Then, too, it is apt to lead to seminal weakness or partial or total impotence. It is always sure to produce more or less constant disturbance of mind, so that it has been known to embitter the lives of many, while some have been driven to suicide. In the way of treatment, little can be practically recommended here, because all treatment must depend upon the constitution and condition of the patient. The means efficient in one case are generally wholly out of place in another. No general rules can be given, and each case must be treated according to the conditions connected with it. Medicines rarely do much good, except when they are designed to meet special conditions. Even the regimen must differ in different cases. When the gleet is kept up by some simple circumstance, as it not unfrequently is, a cure may be readily effected, but too often it becomes extremely difficult to manage, and may long baffle the best medical skill.

If the gonorrhea leads to permanent stricture, as it is almost sure to do if improperly treated, or neglected, then the symptoms and consequences attending it, and the treatment required, will be such as have been already noticed in the section on stricture.

In the female, owing to difference in anatomical structure, gonorrhea may affect a much larger surface, although it is seldom as severe or as complicated as in the male. The disease may be confined to the vulva, the urethra, the vagina, or the womb, or it may affect several or all of these parts at the same time. But few of the symptoms attending gonorrhea in the male are manifested in the female, although there may be similar inflammation, and when it affects the urethra a degree of similar scalding heat may be experienced. A corresponding discharge of matter will also take place, which may be of considerable abundance and of varied appearance, being usually more or less discolored, sometimes odorless and at others very offensive, and tending to produce excoriations on the parts with which it may for some time remain in contact. Uneasiness or slight pains may also be experienced in walking or in sitting. Frequently ulcerations may take place in different parts, and sometimes there may be swellings in the groins. When the disease affects the womb, sensations of dragging down may be experienced similar to those occasioned by other diseases. The ovaries may also become inflamed, and, like the testes, be so injured as to lose their functional powers. Strictures seldom take place, and even when they do, in consequence of the urethra being much shorter, wider, and simpler in form than in the male, they occasion no great inconvenience. It often happens, how-

ever, that in the female all the symptoms of gonorrhea are so very slight that but little inconvenience of any kind is experienced beyond that connected with the discharge; so that a woman may sometimes have the disease for a considerable time and remain ignorant of the fact, or it may even continue for a time and then pass away, its true character having not been discovered. The general treatment is very much the same as in the male, although local applications are generally more practicable; and while similar precautions must be observed as to diet and habits, repeated washings and cleansings become even more important. When scalding heat attends the disease, copaiba or cubebs may be employed, and where the seat of the gonorrhea can be reached, the injection previously given (page 252), will be practicable. When the disease attacks the womb, a cure often becomes very difficult. All applications to that organ must be made with great skill and care, and while every possible attention must be paid to preserve rest and quiet, as well as to the diet and habits, every effort must be made by general means to reduce any inflammation as speedily as possible. When gonorrhea occurs during pregnancy, it should by all means be remedied before parturition, or it may produce very serious effects upon the child, many cases being reported where the eyes of the infant were affected, and even destroyed in consequence of the gonorrheal matter having come in contact with them.

SYPHILIS.

There are two distinct diseases generally understood to be included under the name of *syphilis* or *pox*. In consequence of the marked similarity between them in certain particulars they were for a

long time regarded as but one disease, and this necessarily led to many speculations to account for the variety of results attending them. Both these diseases commence very much in the same way—that is, by the appearance of an ulcer, called a *chancre*, usually on the glans penis or under the prepuce, and occasionally in the urethra. These *chancres* are commonly known as the *soft* or *phagedenic*, or as the *hard* or *Hunterian*, chancres.

A chancre usually commences with a slight burning or itching at the point where infection has taken place. When the place is examined, a small red spot will probably be observed, and this is soon developed into a small pimple—a slight elevation of the skin containing no fluid. This pimple speedily develops into a pustule—a slight elevation of the skin containing pus or matter. Not unfrequently the infection remains unnoticed until the pustule is developed. This pustule soon develops into an ulcer or sore, and thus far the progress or development of the soft and hard chancres are very much alike. The ulcers thus developed, however, differ considerably, so that the soft chancre is readily distinguishable from the hard one by the practised eye, although it is not so easily described as to render the difference unmistakably apparent to those who have never before seen anything of the kind, or who are inclined to hesitate in forming a conclusion.

The ulcer known as the soft chancre, though generally round in the beginning, has a tendency soon to become irregular, so that its boundary or margin is said to be irregular, ragged, thin, and uneven, and rather inclined to be indented than elevated. In color, the ulcer is coated over with a matter described as grayish, while it has a margin

of a brown or violet hue, and is surrounded by a red circle of more or less extent. It also possesses the distinguishing feature (so long as it remains untouched by any application) of being always soft, there being no hardness under it nor around it, and it is principally by this feature that it is unmistakably recognized.

The ulcer known as the hard chancre usually remains round, and is coated over with a matter which has been pretty accurately described as resembling chamois leather. The distinguishing feature of the ulcer is its induration or hardness, a hard lump existing under it, while its border is slightly raised and feels hard like gristle. A hard spot often remains even after the ulcer has disappeared, and so long as this hardness exists, the disease is regarded as uncured and liable to make its appearance again in some of its many forms.

Both the soft and hard chancre are exclusively the result of contagion, and neither has ever been known to originate from any other cause than that of absolute contact with the poison or virus. This contact may, by accident or otherwise, take place on any part of the body, and wherever the virus remains in contact with the skin long enough to be absorbed, it will there produce a chancre of its kind—that is, if the virus be that of a soft chancre it will produce a soft one and if of a hard chancre it will produce a hard one. One disease never breeds the other, neither will one, as it progresses, so change as to partake of the character of the other; but it is possible for both diseases to exist simultaneously in the same person, a number of instances of the kind being reported. It is also possible that, in connection with this combination, gonorrhea may exist so that the three diseases may

be combined, each having to run its course without reference to the other.

The soft or phagadenic chancre usually makes its appearance very early after infection has taken place, being frequently observable in three days thereafter, and generally some time between three and eight days. A few cases are, however, known where it appeared earlier, and a number where it did so later. It may appear on any part of the body—that is, wherever on the body the virus has been absorbed, and it may be small or it may be large. It has, however, a remarkable tendency to spread, and in a very short time it may cover a very large surface—forming extensive and disgusting sores, and eating away the flesh with great rapidity. It is very apt, if neglected, rapidly to destroy the organ usually attacked. It may also cause buboes, by which name the peculiar swellings of the glands of the groins which attend diseases of the generative organs are known, and these may suppurate and spread.

Though the soft chancre may appear very formidable, because of the large, fearful, and horrifying sores which it produces, it is, after all, a comparatively simple disease, being regarded as never entering into or poisoning the system, and as never producing those terrific secondary and tertiary symptoms in consequence of which the body literally rots away, and which, unfortunately, are transmissible from the parent to the offspring. Formidable as it appears, it is often cured by very simple means, such as the injection on page 252, used as a lotion and pretty constantly applied, seldom or never requires the administration of internal remedies, and never demands a violent or mercurial treatment. In consequence of its being so

easily remedied, it has been not inaptly said that it has made the reputation of many a pretended curer of the pox, who was probably as ignorant of the real nature of the disease as the patient himself.

The hard or Hunterian chancre is altogether different. It seldom, if ever, appears as early after infection as the soft chancre, and is not apt to spread so rapidly into an extended sore; so that it has been given as a rule that a pretty accurate judgment as to the character of a chancre may be formed from its early or late appearance, and from its tendency to spread rapidly or slowly. The average time of the appearance of a hard chancre, after infection, has been placed at from two to three weeks, although it may frequently appear much earlier or later, and sometimes not until a month or more thereafter. These variations are accounted for by supposed constitutional peculiarities, and are especially regarded as depending much upon inflammation, tender, chafed, or abraded surfaces at the point with which the virus comes in contact. The infection is supposed to be occasioned by absorption, and when the skin is thin, cracked, or injured, the process of absorption is presumed to be much more rapid, and it is even believed that it is sometimes instantaneous.

Although the hard chancre is seldom as formidable, apparently, at its first appearance, as the soft one, it would be difficult for the imagination to conceive a calamity or curse to which it may not lead. It is this chancre which is followed by those fearful secondary and tertiary symptoms of syphilis which either speedily rot or devour the body, or linger on for years, half cured, and contaminate the blood of innocent offspring, so that even in the new born infant their ravages are encountered.

The hard chancre is always an indication that the system is contaminated, or that constitutional or secondary and tertiary symptoms will follow in their worst forms, unless the one be modified and the other prevented, because the system is affected really before the chancre makes its appearance. The mere primary ulcer is of but little consequence, and may be speedily healed, being even more readily removed than the soft chancre, but this does not prevent the disease from progressing. To enumerate the variety of effects which it may produce, as it progresses, is simply impossible, because these may extend over years and even over two or more generations. It may, however, be said here that the chancre may be followed by buboes, and these may be either sympathetic or the product of the virus. They may prove but little troublesome, or they may break from beneath and form ulcers which will discharge a virus similar to that of the original chancre; and this virus, unless great attention be paid to cleanliness, will breed new ulcers wherever it lodges. Buboes are sometimes regarded as forming part of the primary symptoms of syphilis, and at others as constituting part of the secondary.

What are called *secondary* symptoms usually appear in from six to eight weeks. They may, however, come sooner, and their appearance may also be long delayed. Sometimes they have been seen even before any primary symptoms had been observed, which led to an opinion that the disease might even first appear in its secondary form. This opinion is, however, generally pronounced erroneous, and it is concluded that in cases where such symptoms first appeared the primary symptoms must have been mild in form and consequent-

ly were overlooked, or they must have existed mildly in the urethra and so escaped unnoticed. Secondary symptoms may show themselves in a variety of ways, often appearing so much like distinct diseases that they are not connected with the original infection in the minds of the uninformed, but the evidences of their origin can generally be detected by the skillful eye. They usually show themselves on the skin, or in the mouth and throat. Reddish and brownish spots will appear on the skin in different places, frequently on the abdomen, thighs, arm pits, and throat; and eruptions will break out on the body, frequently covering it entirely, and usually attacking the face, the forehead, and the roots of the hair on the scalp. These eruptions are usually red at first, then they become yellowish, and then of a copper color, and on the top of each a scurf or scale is formed which falls off, leaving a small spot apparently a little raised above the surface of the skin and of a shining copper color. One eruption is soon succeeded by another, and these eruptions may take place several times, until at length deep scabs are formed and cast off, and finally ulceration occurs, and a poisonous and offensive matter is discharged. When the symptoms are manifested in the mouth or throat, a thickness of speech is apt to be occasioned in consequence of the tongue becoming affected. The two almond-shaped organs on the sides of the throat, called the *tonsils*, the roof of the mouth, called the hard and soft *palates*, and the tongue-like appendage projecting from the middle of the soft palate, called the *uvula*, will become ulcerated so as to occasion soreness in swallowing and hoarseness of voice. The syphilitic ulcer in the mouth and throat is not always readily distinguishable by the iner-

perienced. It has been described as having an appearance "as if it had been dug out," and as being very foul and having adhering to it a thick white matter; or as a white patch, resembling a patch occasioned by scalding, the white covering appearing as if it could be readily wiped or washed off, but when the attempt is made it is found to adhere very firmly.

What are known as *tertiary* or *third* symptoms, are more deeply seated, affecting the entire system so thoroughly as to extend even to the bones. Sometimes tertiary symptoms are manifested by strange tumors, deeply seated under the skin on different parts of the body. These tumors, from being generally movable and hard at first, will become fixed and soft, and finally extend to the surface of the skin and break, forming deeply-seated ulcers or sores from which a thin and acrid matter will almost constantly run. These ulcers may possibly heal, but they will leave extended scars and be successively followed by other similar tumors and ulcers, so that the trouble is constantly kept up. Then, again, the bones may be affected, in which case wandering pains, resembling those of rheumatism, will probably be felt at first, and then these will settle and remain in special parts of the bones; then the *nodes* (by which is meant tumors in the fibrous membrane coving the bones, called the *periosteum*) will develop, and although these nodes or tumors may sometimes pass away, the chances are that they will continue and finally suppurate and form ulcers. Then the bones themselves may decay and come away in pieces, or they may decay and crumble and come away in the form of earthy matter; or, again, they may become hard and brittle, in consequence of the loss of the

animal matter belonging to them naturally, and fracture or break upon the least accident to or strain upon them.

The time when the different secondary and tertiary symptoms attending syphilis may appear cannot be specified with any degree of accuracy. Observation has shown that but little more can be said than that the chancre or primary symptoms may appear in from one to five or six weeks; that secondary symptoms, principally exhibited on the skin, may show themselves in from six to eight weeks, or many months thereafter; and that tertiary symptoms may occur within six months from the appearance of the chancre, or years thereafter. These symptoms appear gradually, one stage of the disease imperceptibly merging into the other, so that it is often difficult to tell where one ends and the other begins. After the appearance of the chancre, a delay of years may occur before the other symptoms will show themselves: partial cures may be effected, and to all appearances the disease may have disappeared; but a year after, or five, ten, or even twenty years after, it may suddenly break out again in some part of the body—so that it may almost be said that the system which has once been thoroughly permeated by it is never safe against its re-appearance. Even though a perfect cure may have been effected, there always remains more or less anxiety of mind, so that if a very harmless pimple appears upon some unusual part of the body, or the most innocent ulcer occurs in the mouth or throat, or the least trifling twitch takes place in the bones, fears are at once created that the old disease is at work again. Nor are these fears always groundless—for it is not always that a cure which is considered perfect, really is so.

The person who has once been affected must be constantly on guard, and carefully watch every strange appearance upon the body, so that its true character may at once be ascertained, and, if need be, its progress arrested.

It would be difficult to enumerate the fearful ravages of this disease. Its constant tendency is towards ulceration, or the forming of sores, and these may eat away any part of the body, bones and all. Unless the progress of the disease be checked, the organs, which are in the vast majority of cases the first attacked, will be destroyed, and the ulcerating process has even been known to extend to and corrode away the lower part of the abdomen so as to expose the internal organs, and even upon these the work of destruction could be seen progressing; deep holes may be made in the legs, arms, or any other part of the body, exposing the bones to view; the cartilage of the nose may be eaten away, and the bones of the palate may be destroyed, so that the nose will cave or fall in, producing that disgusting disfigurement occasionally observed even in our public thoroughfares; the eye-lids and eye-balls may be ulcerated away, so that nothing remains of the organ of vision but its gaping and ghastly socket. Different bones of the body may be rotted and destroyed, or hardened so as to be useless; tumors may form under the skull, and terminate the existence of the person by pressing upon the brain, or the bones of the skull itself may rot away, so as to expose the brain—but what sickening disfigurement of the human body can be imagined that may not be produced by syphilis? Yet, in spite of its fearful ravages, by some wonderful power of endurance, the patient will often bear up under it for years, a most pitiable or horrifying object to be-

bold, as if nature had designed that such spectacles should serve as a warning and admonition to her children; and when, at last, the poor victim dies, dissection shows caries or rottenness of the bones, particularly of the skull; often ulceration of the brain; enlargements and hardening of the lymphatic glands; scirrhus or hard insensible tumefactions of different organs, especially of the liver and lungs; morbid enlargements or hard tumefactions of many of the hardest bones; and numerous other conditions alike exhibiting the malignant character of the disease.

These frightful ravages, however, are not the worst features of syphilis. The most deplorable fact connected with it is that it may be communicated to others and transmitted to offspring. The matter from a primary chancre, and, under certain conditions of the disease, also that from a secondary or tertiary ulcer, may produce a similar disease in others. It is an ascertained fact, that by a process of inoculation, similar to that of vaccination, with the matter from a primary, secondary, or tertiary syphilitic sore, or even with the blood of the person affected by such sores, the primary chancre may be produced upon another person, and that when so produced it will progress to secondary and tertiary symptoms. It is also ascertained that the matter from a syphilitic sore in its fluid condition will preserve its vitality or infecting power for a number of days, and even when dried it may infect upon becoming moist again, so that from such matter the disease may be taken in many different ways, the only requirement being that it be kept in contact with the skin until absorption has taken place. Therefore, it has been discovered that the infectious poison may be taken from the

mouth of a person by a kiss, and from the hand by shaking hands; likewise from pipes, drinking cups, spoons, knives, forks, hair combs and brushes, handkerchiefs, towels, baths, chamber vessels, clothes, etc., which have been used by an infected person; from razors and surgical instruments used upon such person and not properly cleansed; and a number of cases are reported where infants absorbed the virus by coming in contact with it on the breast of a diseased nurse, while several are also given of nurses taking the disease from the mouths of children who had been born with it. In consequence of the syphilitic taint in the vaccine lymph employed, many cases are reported where the disease was conveyed into the system by vaccination to guard against the small pox. It is also claimed that syphilis affects the milk, so that the disease may be conveyed to an infant through the milk of the nurse. While, however, there is a possibility of taking the disease in any or the ways here enumerated, as well as in many others of a similar character, and while there have been many cases in which it was undoubtedly communicated in some such manner, it is nevertheless a fact that infection generally owes its existence to habits and practices which render it less calculated to awaken human sympathies; and so generally is it due to such habits and practices, that an infected person is very apt to occasion disbelief even when justly ascribing the infection to other causes. Then, again, the disease, in its secondary and tertiary stages, may be transmitted to offspring, a fact which was at one time supposed to be due exclusively to the existence of syphilis in the mother, but conjecture now assigns a like power to the father in consequence of the supposed contamination of the seminal fluid,

It may pass from the parent to the child, or it may pass to the grandchild, and even further on in the line of descent, manifesting itself in the offspring in a multiplicity of ways, and frequently terminating in the death of the infant.

Syphilis in the female is precisely the same as already described, usually making its first appearance by chancres on the external or internal genital organs, and then running through its several stages, frequently presenting appearances so horrid as to preclude description; and even if such description were attempted, it would be regarded as an incredible tale by all except those who have witnessed the destructive and horrifying work of the disease.

Remedies and Treatment.—After many years of observation, investigation, and experiment, syphilis may be regarded as almost absolutely under the control of medical science. In consequence of the fears inspired by the disease, many singular means have been recommended to guard against it. Of these, that of inoculation may be mentioned here as indicative of the extremities to which intelligent minds may be led under peculiar impulses. It was first observed that certain persons appeared to be so constituted by nature as to be apparently proof against the disease, so that no exposure, however great, seemed to infect them. Next it was observed that if a person had once contracted the Hunterian chancre and had consequently had his system contaminated by it, he was not likely, after a cure had been effected, to contract the same disease a second time—one infection generally, though not universally, apparently acting as a preventive of another, just as one attack of the small pox serves to guard the system against another. These facts suggested the idea of preparing the system against contagion

by a process of inoculation similar to that known as vaccination. Strange to say, some few instances are even recorded of persons having submitted to this process!

Although the disease cannot be prevented from entering into the system, if, upon the appearance of the Hunterian chancre, proper treatment be at once secured, the chances are nearly all in favor of a cure where the system is not otherwise shattered or broken down. It is true, cases may sometimes be encountered in which all that is known to science will fail, instances having occurred where the disease was of such a malignant character as literally to devour its victim, in a few short months, "right before the eyes" of the best skill known to the profession. Such cases, under such care, are, however, extremely rare and exceptional—one, perhaps, in thousands; yet it is proper to know that they may occur. It is of the utmost importance, in all cases, that proper treatment should be secured as speedily as possible, not only because the disease is more readily checked in its early stage, but also because it may speedily so impair the system as to render it incapable of enduring the vigorous treatment which may actually be required to effect a cure.

It would be useless to designate any special remedies here. The most that need be said is that there is but one specific known, and that that consists of mercury. It is true, the use of mercury has been much denounced, but it is equally true that thousands are now well and among the living, who, but for this drug, would long since have been "eaten up alive" by the disease. In the hands of the skillful the remedy is as safe as it is dangerous in the hands of the ignorant, and hence the best that can be done in all cases is to have immediate recourse

to some reputable practitioner. Immediately after suspicion of infection has been aroused, the proper treatment should at once be secured. Whether the infection arises from a soft or hard chancre, it is dangerous folly to trifle with the disease either by delay or by improper treatment, and the exercise of very ordinary discretion will be sufficient to secure such treatment as the case may demand. There are few reputable physicians indeed who have not had sufficient experience to become masters of the disease, and it may be truly said that its treatment has, of necessity, become a much more extended source of practice with them than with those who loudly profess to have made it a "specialty."

CHAPTER XVII.

FUNCTIONAL DERANGEMENTS.

VERY frequently, in the female, functional derangements take place, producing a variety of affections known by different names. Of these the most prominent are *chlorosis*, *amenorrhæa*, *dysmenorrhæa*, *menorrhagia*, and *leucorrhæa*.

CHLOROSIS.

This disease most frequently occurs at about the time when puberty is or ought to be established, although it may exist at any subsequent period: it is principally confined to young and unmarried women, but it also sometimes occurs in the married, in those who have borne children, in the pregnant,

and in those who have passed the change of life. Although chlorosis is regarded as peculiarly a female disease, some rare cases are reported where its symptoms were well marked in males. It is usually characterized by a pale, greenish color of the face, and hence it is commonly known by the name of the *green sickness*. It has also been called *white jaundice* and *white fever*. It has been ascribed to many causes and much conjecture has been indulged in as to its origin. The predisposing causes, in early life, have been said to consist in a delicate, feeble, and undeveloped constitution, resulting in a delay of the natural action of the ovaries and consequently in postponing the time of the beginning of menstruation—in such an undeveloped condition of the system as tends to prevent the establishment of puberty, or retards those changes which should then take place from developing perfectly; for at this period, “the constitution has not only itself to nourish, but it must have energy to rouse and excite to action a new set of organs, and to supply the materials for an increase of their growth, and all other purposes incident to their function.” At a later period, the predisposing causes are mainly ascribed to the different derangements which may interfere with the natural course of menstruation. Generally, all those habits, practices, modes of life, and all causes, of whatever nature, that tend to relax or enfeeble the constitution, or to weaken the tone of the sexual system, may be regarded as predisposing causes of chlorosis; and especially are such influences calculated to lead to the disease in young persons. Under such circumstances, almost anything may become the exciting cause of the disease, especially when it is remembered that under more favorable conditions chlorosis may be excited

by mental depression, disappointed affection, sadness occasioned by separation from family and friends, and by other depressing influences upon the mind though brought about by very trivial causes.

Chlorosis is accompanied by numerous well marked symptoms. The chlorotic patient is usually languid, incapable of much exertion, soon fatigued, and hence exhibits but little activity: she is dull, listless, sometimes perverse, sullen, or melancholy; her appetite is capricious, and then becomes morbid, so that she craves for unwholesome food, and may even desire chalk, slate pencils, or charcoal, and sometimes the taste has been so depraved that dirt, ashes, flies, and other insects have been devoured; her complexion is pale, being of a yellowish, dirty green color, and the lips, gums, and lining membrane of the mouth are bloodless, while the tongue is white, soft, and flabby; the breath becomes offensive, the stomach sometimes affected with nausea, and occasionally there will be vomiting and frequently heart-burn; the evacuations are sometimes clay-colored, and the bowels are generally constipated, or occasionally affected with irritable and painful diarrhoea. Acute headache, unlike headache generally, often attends the disease. This headache has been described as being “attended by every variety of distressing sensations, such as heavy weight in the front or at the back of the head, giddiness, fixed and intense pain in one particular spot, paralytic feeling and neuralgia.” Dark lines may usually be seen underneath the eyes, about the sides of the nose, and at the angles of the mouth. In the morning the eyelids are dark and swollen, while at night the ankles and legs are frequently so. The feet and hands are

often cold. Menstruation may not commence, or it may begin and cease. When it continues, its intervals become distant, the discharge is scanty and flows but for a few hours, while its color is pale and its odor often offensive. The skin may also become dry, the finger nails brittle and split, and the hair change its color and fall off in quantities. As the disease advances, the abdomen may become full and painful, a slight, short cough may arise, pain may be felt in the left breast, and hysteria may occur in a variety of forms. Not unfrequently the symptoms are such as to occasion the belief that the brain, the heart, the liver, or the lungs are diseased.

A peculiar change takes place in the blood of the chlorotic patient, and it is upon this that the disease is supposed to be mainly dependent. The quality of the blood seems to be altered, and, when examined, it is found to be of a pale red color and watery, so that it has been compared to the "juice of a cherry." It is to this deterioration of the blood that many of the symptoms attending the disease are traced, and it is this condition that also frequently constitutes the most prominent indication as to the treatment required.

Of itself, chlorosis is seldom fatal. It may, however, last for some years, and finally the patient may sink under actual exhaustion, death apparently resulting from sheer debility and the wasting away of the system. Most generally the fatal consequences follow from some complication of the disease. It is peculiarly apt to become complicated with bloody discharges from the stomach by vomiting, chronic derangements of digestion, functional affections of the brain, structural change of the lungs, etc.; so that the disease seldom continues

long enough to prove fatal of itself, but generally leads to other complications more speedily destructive of the patient.

Remedies and Treatment.—The treatment of chlorosis is generally more tedious than difficult, and to be effective must usually be persistently and untiringly prosecuted. As the disease is never found in the strong, robust, and active female, but always in the weak, delicate, and sickly, and such as lack pure blood, whatever tends to produce the former condition or prevent the latter may be regarded as appropriate in all cases. The patient should be placed in a situation which is warm and dry and where the pure air is constantly breathed. All her surroundings should be comfortable and agreeable alike to body and mind. Her clothing should be such as will keep the body free, warm, and comfortable, an end which is often accomplished by wearing flannel next to the skin. The bath should not be neglected, and be taken tepid or cold, as the condition of the patient may indicate, at least two or three times a week, and be followed by such friction of the body as may impart a healthful warmth or glow to the skin. Both night and morning, friction or rubbing of the body should be practised by the patient herself for at least ten or fifteen minutes. Exercise in the open air is especially desirable, on horseback if practicable, but by all means in some form, only avoiding fatigue; and wherever changes of air and scene are practicable they will tend to prove beneficial—many a case having been cured by a long and pleasing journey or a sea voyage. The pastime of dancing, if indulged in in moderation and in day time, has also been found to have a peculiarly beneficial tendency. The diet should be such as is easy of diges-

tion and as nourishing as possible, and everything that has a tendency to "disagree with the stomach" should be avoided. In short, the habits of the patient should be such as are, in every particular, calculated to restore the general health, and her associations should all be pleasing and agreeable, and everything that has a depressing tendency upon the mind, or agitating influence upon the feelings, should be carefully shunned.

Of the remedies most frequently recommended in chlorosis, preparations of iron stand pre-eminent. Some preparation of the kind is especially recommended to be used early and freely. Of the preparations often used, the following may be enumerated here:

1. Compound iron pills, two pills of five grains each, to be taken three times a day.
2. Carbonate of iron pills, dose the same as above (1).
3. Syrup of iodide of iron, twenty drops twice a day, in half a tumbler of water. This is particularly useful where there is any tendency to scrofula.
4. Tincture of the muriate of iron, ten drops three times a day, in half a tumbler of water.
5. Sulphate of iron and subcarbonate of potash, each half an ounce. These must be rubbed separately to very fine powders, and then thoroughly mixed together, with sufficient thick mucilage of gum tragacanth to make it into a paste. This must then be divided into forty-eight boluses. One of these may be taken morning and night, for the first three days, and one *three times a day* on the second three days; on the third three days, two may be taken morning and night, and *one* in the middle of the day; on the fourth three days, *two three times a day*; on the fifth three days, *three three times a day*; and on the sixth three days, *four pills three times a day*. This quantity may be continued till the disease begins to disappear, after which the dose may be decreased in the same way it was increased, or, if the patient seems nearly well, it may be decreased before arriving at the largest quantity.
6. Citrate of iron, two drachms, sulphate of quinia,

half a drachm, and water, one ounce. Mix, and take twenty or thirty drops in half a tumbler of sweetened water, three times a day, half an hour before each meal.

The use of some preparation of iron, observing a proper regimen, and keeping the bowels regulated by mild cathartics, generally proves efficient in effecting a cure, although this treatment must sometimes be persisted in, and not abandoned too soon after an improvement has been effected, lest a relapse of the disease will occur. Where the disease is complicated by other affections, such complications must be speedily removed by the treatment which they render necessary, and it should always be remembered that it is from some complication that the most serious difficulties are apt to arise.

It may be added that marriage sometimes cures chlorosis, yet its good effects are not always certain or invariable. Not unfrequently the disease is seen in its most aggravated form in married women. When the disease occurs just before the time for the first appearance of the menses, the occurrence of that event is very apt to effect a cure, and hence a quick resort, in such cases, to the use of medicines is not always to be recommended.

AMENORRHOEA.

By this term is meant the *absence of menstruation*, from causes other than those of pregnancy or old age. It may be owing to a variety of causes of a different character, each requiring different treatment.

First.—Amenorrhoea may be owing to some defect in structure, malformation, or deficiency in the genital organs. It is possible for the ovaries to be absent altogether, or one or both may be affected by some disease of structure. Where both are either absent or so affected, menstruation must necessarily

be totally absent also, although it may occur and proceed where one of these organs is sound, or but partially affected. The womb, also, may be wanting, or it may exist and its neck be absent, or the neck and mouth may be closed so as to be impervious. Then, again, there may be no vagina, or it may not be connected with the womb, or its walls may adhere together, or the canal may be obstructed by solid growths, or there may be an imperforate hymen. Causes of this kind may operate to prevent menstruation altogether, or they may occasion retention of the menses. It is true, the cases where amenorrhœa is owing to such causes are not very numerous, yet they may occur. When the organs themselves are absent, there is of course no remedy, and when the malformation is extensive there is but a very meagre prospect that the condition of the patient can be amended. Sometimes, however, local obstructions may be remedied by the surgeon very readily, and many cases are reported where surgical skill proved of great avail.

Second.—Amenorrhœa may be owing to the non-development of puberty, or to its slow or partial development. The cases where puberty is never developed, or menstruation never begins, are very rare, although such cases do occur; and while they are generally dependent upon some congenital malformation or deficiency, instances are nevertheless met with where the constitutional powers are too much enfeebled to accomplish the development of the genital system. Amenorrhœa is more frequently due to slow or partial development of puberty. Very often, however, fears are entertained of disease when there are no reasons for such apprehensions. As the time when puberty appears may vary much in different persons, the non-ap-

pearance of menstruation at the most usual age should not at once be regarded as due to disease. The commencement of the flow may often be retarded beyond the average age without the least inconvenience being produced, while attempts to force its appearance may prove highly injurious. Especially may its delay be occasioned by delicacy of constitution, a delicacy which is often the result of the mode of life of the individual, or of some unhealthful confinement or employment. A too sudden and rapid growth of body may also serve to delay the development of the genital system, as well as a variety of other causes. It is, therefore, extremely hazardous to form rapid conclusions that disease exists, and very generally proper care of the general health will serve to bring about natural conditions. Where, however, amenorrhœa does exist at this period of life, it produces conditions very much like those of chlorosis, and requires very much the same treatment. Usually a cure is effected, although it may sometimes require the exercise of much care and patience.

Third.—Amenorrhœa is most frequently due to suppression, which may occur at any time after menstruation has been fully established. This suppression may be occasioned by a variety of causes, but it may be said as a rule that the two great causes which produce it are mental emotions and the application of cold. The emotions may be those of joy or of pain, and yet the result may be the same. Anything that effects the mind to an extreme extent, may not only prevent the appearance of the menstrual discharge when it is about to take place, but also at once arrest it when it is in progress: thus the terror occasioned by the invasion of cities by hostile armies has been known to

cause the disease in large numbers of females. Suppression has been known to follow the receipt of bad news, sudden fright, disappointment, anger, jealousy, frightful dreams, a sudden clap of thunder, or report of a cannon, and other like causes. Though frequently occasioned through impressions first made upon the mind, it is still more frequently produced by cold, whether by a stream of cold or damp air, wet feet, by drinking cold water when heated, by damp linen, or otherwise. Any application of or exposure to cold which tends to check or suppress perspiration may occasion amenorrhoea.

The symptoms of suppression are numerous, and often serious, and have been thus described: "In a young or middle-aged woman, fleshy, of plethoric habit, and ruddy complexion, the immediate suppression of the secretion will be followed by congestion, if not by inflammation. While in a woman delicate, thin, and spare, of sallow aspect, and highly nervous, the more probable consequences are irritation, attended by spasms and paroxysms of severe pain, with intervals of ease. In the former case there will be sensations of weight and pain in the head and loins, tension and acute and constant pain in the region of the womb aggravated on pressure, short breathing, a hot skin, and a full, hard, and rapid pulse; occasionally there will be violent hysteria, and delirium has also been observed. Suppression, accompanied by such symptoms, is more immediately dangerous than any of the other derangements of menstruation. But suppression occurs perhaps more frequently in delicate and spare women, who are highly nervous and irritable. Inflammation may be, even in them, the product of suppression, but in the majority of such attacks, the pain and other symptoms are not

inflammatory, although it is sometimes difficult to distinguish the aggravated neuralgia and spasm of the different abdominal organs, and of the womb and its appendages, from real inflammation. The pain is rarely fixed, changing its locality without the use of remedies; and, if treatment be employed, such as local bleeding, a mustard poultice, or a stimulant and narcotic embrocation, it is remarkable how quickly the pain is transferred from the womb to the head, from the head to the chest or heart, and again from these parts to the intestinal canal." When menstruation is obstructed, nature often makes an effort to obtain for it some other outlet, so that if the obstruction continues for some time it not unfrequently happens that the blood which should have passed off by the womb, being determined more copiously and forcibly to other parts, gives rise to hemorrhages; hence it is frequently poured out from the nose, stomach, lungs, and other parts in such cases. If these efforts of nature fail, the consequence may be fever, pulmonic diseases, spasmodic affections, hysteria, epilepsy, mania, apoplexy, green sickness, etc., according to the general habit and disposition of the patient.

In the treatment of suppression very frequently great judgment is required as to the proper course to be pursued, and it often becomes extremely important that the mode of treatment best adapted to the case should be speedily ascertained. No specific course to be pursued can be recommended here, for, while very simple remedies may in certain cases produce the most salutary effects, in others the most active and vigorous treatment becomes imperative. Often a cure may be gradually or speedily effected by simple attention to the improvement of the general health, or by the use of an iron tonic,

while in numerous cases the utmost skill of the physician may only serve to mitigate symptoms. In a general way, however, it may be said that when the causes by which the disease was occasioned are known, it is always proper to remove or to avoid them, and where it is dependent upon some other disease in the system, as is often the case, this must be removed, after which a cure will speedily follow in most cases. It may also be added that the disease may assume a chronic form, and it should be especially remembered that after one attack of suppression and its removal, the utmost care should be observed, and immediately previous to the subsequent periods every means should be adopted calculated to ensure a natural discharge, such as keeping the bowels free by mild laxatives, guarding against cold, keeping the feet and surface of the body generally warm, avoiding mental emotion and undue physical exertion, and using the mustard, hip, and foot baths on alternate nights.

DYSMENORRHOEA.

Dysmenorrhœa, often called painful menstruation, is defined as menstruation, preceded or accompanied by severe pains in the womb and adjacent parts. The disease may affect all women, married or single, and the latter seem to be particularly subject to it. It prevails to a large extent, causing much distress and suffering among the female sex. It may commence early in life, even with the first menstruation, or at any time after, though the function had previously been healthily performed for years. The causes producing the disease are not well marked or defined, and have been stated to be a feeble, nervous, and irritable constitution; plethora, characterized by a red face, and full, strong pulse; or a

disordered state of the digestive organs, or disease or imperfect development of some of the parts. Whatever tends to bring about such conditions may hence be regarded as indirect causes of the disease. The symptoms attending it are pains in the womb, back, groins, and thighs, and a sensation of heat or burning in the parts. There may also be sickness of the stomach, vomiting, and cramp in the limbs. Generally there is severe headache, and often hysterical symptoms occur, such as choking in the throat, restlessness, irritability of temper, sudden prostration of strength, etc. The pains may vary considerably in different cases, and when of an inflammatory kind, are accompanied by a heated and dry skin, a rapid pulse, and great tenderness in the womb. The pains may be temporary, remaining but for a short time, or they may continue a source of intense suffering during the whole period of the discharge. Sometimes these pains exceed in severity and are of much longer duration than those of labor. In some cases the discharge is preceded for some days by severe pains in the breasts. Very frequently, when the discharge has ceased, considerable prostration is seen, although the pains end and the system begins to recuperate. The discharge in dysmenorrhœa is shreddy, clotted, and generally, though not always, scanty in quantity. It has been more particularly described as follows, by Dr. RYAN: "The woman experiences severe pain the first day of menstruation, and suffers as severely as if in labor, or by abortion. She often experiences relief by the expulsion of one or many membranous substances from the womb. These membranes are somewhat like the skin of a gooseberry, and are smooth on each surface, thus differing from the decidua membrane. The mem-

brane is so like the covering of the infant in the early months of pregnancy that a lady who was a patient of Dr. HAMILTON'S, thought she miscarried ten times a year, for three years." The disease is regarded as rendering the female barren, or as often preventing conception, and if pregnancy should occur during its continuance abortion is very likely to follow. Though dysmenorrhœa is not necessarily fatal in itself, it may continue for years and embitter the life of the person by repeated sufferings. It may also be followed by or occasion other diseases of a more malignant and fatal character. Neglect or improper treatment may also serve to aggravate the disease, and its long continuance may impair the constitution and give rise to a series of annoying and distressing complaints.

The treatment of dysmenorrhœa is often difficult to determine, the disease being frequently very obstinate and hard to cure. To relieve the pain the following course has been recommended: "Let the patient sit over a strong decoction of bitter herbs, such as tansy, hoarhound, wormwood, catnip, and hops, while a blanket is thrown round the waist to confine the steam to the lower parts. After she has been thus steamed, and the feet bathed, let her be put into a bed, warmly covered, and diluent drinks given, such as tansy, thyme, pennyroyal, etc. At the same time let fomentations of the same herbs, inclosed in a flannel bag, be applied to the abdomen. This will produce perspiration and afford immediate relief; and when these distressing symptoms are removed, and the patient becomes comfortable, a course of treatment must be adopted to prevent a recurrence of these symptoms, or to produce a natural flow of the catamenial discharge." Various other more vigorous

means are also often resorted to for the relief of the pain, and generally with success; but, unfortunately, it too often happens that upon each return of the discharge the same difficulties are experienced. While many remedies have been recommended for the cure of dysmenorrhœa, none have that specific effect, and each case must be treated in accordance with its own indications. Where the dysmenorrhœa is dependent upon some disease of the parts, this must be remedied; where it is due to plethora, a vegetable diet and laxatives are indicated, together with such other means as may reduce the quantity of the circulating fluid; and where it is owing to debility, the system should be strengthened by a nutritious diet and iron tonics.

MENORRHAGIA.

This complaint consists in an unnaturally excessive flow of the menses, and may be regarded as pretty accurately defined by the names under which it is generally known, such as *profuse*, *immoderate*, or *inordinate menstruation*. Menorrhagia has been thus described: "There are two classes of females peculiarly disposed to menorrhagia. In the robust and plethoric, the disease is characterized by inflammatory symptoms, as permanent pain, sense of fullness, weight, and tenderness in the region of the womb, together with a hot skin, and a full, hard, febrile pulse. These are the symptoms of an active or acute disease, which has been called inflammatory menorrhagia. With the other class of females, the disease is attended by no pain in the region of the uterus; there is a bleached countenance, a languid circulation, and a small, weak pulse: this is the chronic form of menorrhagia, or that form which has distinguished menor-

rhagia from debility. Among those who suffer the acute form of menorrhagia, the symptoms are sometimes those of inflammation and sometimes those of spasmodic affection, and hence spasmodic menorrhagia, or menorrhagia arising from irritation, has been constituted a third variety of this complaint. Thus we have three kinds of menorrhagia: the first is characterized by inflammatory symptoms; the second by general debility, and probably a relaxed and passive state of the vessels of the womb; and the third by spasms and irritation. Thus, a woman may menstruate at the regular periods, and the discharge may continue the usual time, yet it may flow with such rapidity that its amount may be more than double that which is customary. Or the discharge may occur at regular periods, and instead of continuing three or four days, as is natural, it may continue ten, twelve, or fourteen days; as in the former case, debility is produced by the rapidity of the discharge—in this, the same state is produced by its long continuance. Or, instead of being regular in its periods, it may recur as often as every two or three weeks and thus also the body is drained of its blood, and the system is debilitated." Menorrhagia may be occasioned by a variety of causes. Some of these are general, such as a state of weakness and debility of system, or of too much blood—the former being frequently the cause of the disease, the latter in but few instances; others are local, such as debility of the womb, occasioned by abortions, frequent miscarriages, or tedious labors. It may also be produced by accidental circumstances determining the blood more copiously and forcibly into the uterine vessels, as violent exercise in dancing, much straining at stool from great costiveness,

contusion on the belly from blows or falls, excess in venery, or strong passions of the mind, particularly at the menstrual period. Practices calculated to impair the health of the organs, habits and modes of life tending to debilitate the system, sudden exposure to cold, and a variety of similar causes are regarded as predisposing to the disease, and as serving to bring into action its more active causes.

The treatment of menorrhagia must necessarily be determined from the causes upon which the disease is dependent in each particular case. Hence no general advice can be given as to the course of treatment to be adopted, each case requiring to be treated in accordance with its individual indications and the condition of the patient. In a general way, however, it is advised that the discharge should be as speedily moderated as possible by having recourse to such treatment as the case may indicate, which must be determined by the proper medical skill. Subsequently, to prevent a recurrence of the attack, "the patient must necessarily avoid the causes by which it was produced. When it is evident that the discharge is in consequence of a full habit, it will be proper to reduce the system by living sparingly, by keeping the bowels rather in a laxative state, and by rising early, and taking through the day regular but frequent exercise; and, after the plethora is removed, by strengthening the vessels which have been over distended, by the use of the cold bath. In a greater number of cases, however, there is a delicate constitution and spare habit, with pale countenance: this state requires the use of sea bathing or the shower bath, and the vessels of the womb are particularly strengthened by pouring cold water daily on the back and loins. It will be advisable to use a generous nutritive diet,

with wine, and to have recourse to appropriate tonics to strengthen the system generally. At the same time the bowels must be attended to, and invigorating exercise taken daily, whilst on the other hand, fatigue, and especially exposure to relaxing heat, must be carefully avoided."

Under the title of menorrhagia are sometimes classed a variety of uterine hemorrhages or floodings. These may take place from many causes, such as "violent exertions of strength, sudden surprises and frights, violent fits of passion, great uneasiness of mind, uncommon longings during pregnancy, over fullness of blood, profuse evacuations, general weakness of the system, external injuries, as blows and bruises, and the death of the foetus, in consequence of which the placenta becomes partially or wholly detached from the uterus, leaving the mouths of the vessels of the latter, which intermingled or anastomosed with those of the former, perfectly open." They may also be occasioned by different organic diseases, such as cancer of the womb, polypus, morbid growths, etc. In all these cases the treatment must be regulated according to the causes which produce the difficulty and the state of the constitution of the individual. Generally, by the proper skill, these floodings can be arrested, although they frequently prove fatal. But little general advice can be given, beyond that in all cases of the kind the patient should at once rest in the recumbent position, the diet should be of a light and unstimulating character, and the bowels should be kept freely open by cooling laxatives, such as the salts, etc. Generally, any accumulation of heat should be avoided and cold acidulated drinks freely used. A variety of local applications may also be found useful, as well as different

powerful medicinal drugs; but these can only be used with safety by a considerable degree of medical skill, a resort to which should always be speedily had.

LEUCORRHOEA.

This is the name given to a disease manifesting itself by the discharge from the vagina of an "excessive and altered secretion of the mucus, furnished by the membranes lining the vagina, the womb, and other parts." Of all the diseases common to females, none, perhaps, prevails more generally than leucorrhœa. It occurs in the young, the single and the married, and is remarked as almost universal sometimes in large cities and particular districts. It is said that very few married women, particularly if they are mothers, escape its attacks, while the young and the robust are less liable to it than those more advanced in life, especially if the latter possess susceptible and delicate constitutions.

Leucorrhœa is also known under the name of *fluor albus*, and more commonly as *the whites*, because in the beginning of the disease the discharge is usually of a white color. This discharge, however, may vary considerably in its appearance, color, and quantity—the many variations met with in these particulars being pronounced as "endless." In a general way, it may be said that in appearance it may resemble mucus, milk, whey, curds, or green water; in color it may be white, greenish, yellow, reddish brown, or colorless; and in quantity it may be simply perceptible or it may even reach six or eight ounces per day. It may also have a foetid or offensive odor, or be of so "acrid a nature as to produce effects on those who are connected with the woman, somewhat similar to venereal matter, giving rise to excoriations about the glan-

penis and prepuce, and occasioning a weeping from the urethra." As a general rule it may be stated that at its first appearance it is white and clear, and as the disease continues or progresses, it becomes variously discolored and acquires acrid qualities sometimes to such a degree as to be capable of affecting others.

Leucorrhœa has been assigned to the same class of diseases as gonorrhœa, and it certainly has often been mistaken for that disease by the ignorant, and this has even sometimes led to domestic troubles and unhappiness. The diseases are distinguished by certain symptoms which are peculiar to each and which have been described as follows: "In gonorrhœa the running is constant, and the quantity of matter discharged is small, there is often considerable scalding of urine or a sense of heat in the urethra, as well as itching of the external parts, swelling of the labia, increased inclination to venery, and not unfrequently swellings in the groin; while in leucorrhœa the discharge is irregular, considerable in quantity, and there is generally no inflammation of the external parts." Under certain conditions, however, both diseases may resemble each other so closely as to require a great degree of skill to distinguish between them. In some cases this may even be impossible without a chemical examination of the matter discharged.

The causes producing leucorrhœa are numerous. It may be occasioned by any cause which serves to irritate the womb or other parts, or which tends to produce debility. Hence, among the causes enumerated are, injuries done to the parts by difficult and tedious labors, or otherwise; frequent miscarriages; immoderate flowings of the menses; profuse evacuations; immoderate coition; puerperal hemor-

rhages; displacements of the womb; polypi of various kinds, affecting the womb, vagina, or urethra; hard or soft tumors of the reproductive organs, ascariæ; pessaries, or other hard body intentionally introduced into the vagina; stimulating injections; cold; intemperance in eating and drinking; want of exercise and fresh air; depression of spirits; strong mental emotions; sudden fright; much anxiety, grief or passion; living in cold, damp, and badly ventilated places; thin shoes; insufficient clothing; poor food; abuse of tea, etc. There is probably not an act, habit, or practice, which can possibly serve to relax the parts or lead to inflammatory action in them, or tend to destroy the vigor of the constitution or to debilitate it, that has not been assigned as directly or indirectly producing leucorrhœa; and, certainly, those whose habits or practices are such as to engender laxity of the parts more immediately affected by the disease, or to produce debility of the system, seldom, if ever, escape from the consequences of leucorrhœa. A high authority asserts that the "disease is most frequently first brought on by some imprudence in respect to diet and clothing, or exposure to cold or fatigue, or neglect of the bowels, about the time when menstruation recurs." So intimate is the sympathetic connection of the womb with every part of the female body, and so varied are the conditions under which leucorrhœa is found to exist, that there is hardly an affection to which any organ of the system is subject, that has not been regarded as acting reflectively upon the uterine system and predisposing to or directly producing leucorrhœa.

The symptoms of leucorrhœa are seen in the discharge already described. There may also be a certain amount of fever and inflammation, a slight

degree of smarting and heat attending micturition, and pains in the back and loins. Often there is considerable loss of strength, or weakness, and this is sometimes so great as to be distressing. Sometimes the pains in the loins, back, and lower part of the abdomen are more or less constant and of considerable severity. There may be indigestion, chilliness, a rapid pulse, white tongue, sickness of the stomach, headache, pains in the breast, palpitation of the heart, coldness of the feet, etc. The countenance may become pale and sickly in appearance, the eyes may ache and their lids may become swollen, heavy and partially discolored. As the disease progresses, the health of the constitution may become more seriously impaired, great prostration may follow, the nervous system may become deranged, and melancholy, hysteria, and a variety of distressing symptoms may be exhibited. Thus the sufferer may be rendered extremely miserable in a variety of ways, and finally the mental and physical debility may become so great as to cause a fatal termination. These symptoms and consequences mark different stages and forms of the disease, and may continue for a shorter or a longer time, depending of course upon the degree of success attending the treatment adopted.

Very often leucorrhœa may endure for years, and it has been known to do so for a whole life-time, producing but little or only occasional inconvenience, and then again it may speedily occasion numerous constitutional derangements the severity of which must necessarily depend upon the nature or violence of the disease and the susceptibilities of the patient. A frequent consequence of leucorrhœa is sterility or prolapsus of the womb, and it may also lead to other complications, such as amenor-

rhœa, chlorosis, and ultimately to slow fever, with difficult breathing, palpitations, faintings, and swellings of the lower extremities, or to dropsy, consumption, etc., and so end in death.

Remedies and Treatment.—As leucorrhœa may exist in many different degrees, and be seated in different parts, it is not always that a proper remedy can be at once suggested, and much less can a general treatment be specified here. It is often extremely difficult to accomplish a perfect cure, especially where the disease has been of long standing, and not unfrequently wholly impossible without such concurrent aid from the patient as can but rarely be given. As an invariable rule, regard must be had to the cause of the disease and the state of the patient. Where the disease is not the effect of general weakness, but originates in increased action of the vessels of the different parts, the use of tonics, heating medicines, and stimulant injections, so often resorted to, are only designed to aggravate it and to increase alike the discharge and the constitutional effects. In its commencement the disease is often of so mild a nature, attended by such little pain or constitutional disturbance, and produces such limited inconvenience or discomfort, that it is entirely disregarded and neglected; and yet it is at this time that it should receive the most prompt attention, for then very simple remedies are generally effective in accomplishing a cure. Very often, in fact, nothing more is required beyond attention to cleanliness, frequent ablutions tending to restore the tone of all the parts, and especially of the secretory membrane. Even where local symptoms are pretty well marked, the discharge considerable and irritating, and the constitutional derangement more or less distressing, ablutions with

tepid water, or poppy fomentations, in connection with mild aperient medicines, rest, abstinence from local excitements, and a spare diet, may effect a cure. In many cases no remedies are needed, care and ablutions only being required, so that a milk diet, change of air, and the partial cold bath, as sponging the loins and thighs with cold water every morning, with attention to cleanliness and proper exercise, are often sufficient to cure the disease. From this mild condition, however, in which the constitution is not seriously affected, it may progress to any degree of severity, up to the most aggravated forms of the disease, and necessitate a resort to such vigorous remedies as can only be applied under the direction of the proper skill after a thorough knowledge of the conditions of the disease.

When leucorrhœa is complicated with or dependent upon some other disease of the system or organic affection, proper measures must be resorted to to remove such complication before any treatment can be expected to prove effective.

By far the most common form of leucorrhœa, however, is that attended by weakness and unaccompanied by inflammation, arising from general debility or laxity of the vessels of the parts. In such cases it is desirable to increase the vital heat, to promote the digestion, and restrain the discharge. In order to accomplish these ends, it is recommended that "recourse be had to such tonic medicines as will be found to agree best with the patient. The bowels must be kept in a regular state by conjoining a few grains of rhubarb with some of the tonic medicines, or by taking occasionally, at bed-time, one aloetic, or aperient, or diaphoretic pill; or, in the morning, a teaspoonful of Epsom salts dissolved in a tumbler of water. If there be a fullness of the

stomach after eating, the tincture of rhubarb in small doses will excite digestion. Besides tonics, stimulating medicines, such as commonly determine to the urinary passages have very frequently been employed with great benefit. Injections, also, will be found beneficial. The celebrated Dr. Burns says, after many trials, he satisfied himself, that although assistance may be derived from internal medicines and the cold bath, yet the chief dependence is to be placed on astringent applications to the seat of the discharge; and these, where there is no fullness of the general system, nor any affection of the womb itself, are perfectly safe, and seldom fail in producing a cure. It will be prudent, when this disease occurs as an early symptom of pregnancy, not to check the discharge suddenly, lest miscarriage be the consequence; but it may be moderated by injections of water, with the addition of a little vinegar, or an infusion of green tea. Neither should the discharge be suddenly suppressed when it has been of long standing, and acquired a considerable degree of acrimony, with an offensive smell; for if it be unseasonably checked, the belly swells, and a train of the most disagreeable symptoms occurs. In such cases soap suds, or an infusion of chamomile flowers or hops, should be frequently thrown up the vagina; and as soon as the blood is freed of its impurities, by suitable medicines, and has recovered, in some measure, its soft and balmy quality of which it has been deprived, the astringent injections may be employed with perfect safety. The application of a blister to the sacrum has, in some obstinate cases, been attended with advantage. When the leucorrhœa proceeds from worms, purgatives and bitter clysters are the proper remedies. Pain in the back and loins is often mitigated by the ap-

plication of a large adhesive or strengthening plaster, and by avoiding a standing posture of long continuance, much walking, dancing, or any other violent exertion."

Of the tonics frequently employed, are the aromatic tincture of iron, muriate of iron, compound iron mixture, syrup of iodide of iron, and bitter teas, gentian, absinthium, etc., and sometimes spirituous liquors and wines and Peruvian bark. The medicines regarded as acting upon the mucous membranes are turpentine, copaiba, cubebs, and tolu; hence copaiba capsules are sometimes used, two of them being taken three times per day; while at other times twenty pills are made of one scruple of sulphate of iron, two scruples of aloes, and as much Venice turpentine as may be required to form a mass, one of these pills being taken three times a day. Of the injections made use of are the following: A strong decoction of poppy-heads, with one ounce of borax to the pint; or infusion of oak bark, two ounces of the bark to one quart of water, boiled down to one pint. Either of these may be used tepid, four or five times a day. Half a dram of the sulphate of zinc, dissolved in six ounces of rose water, injected two or three times a day. The compound alum injection, various solutions of alum, sugar of lead water, and spirituous lotions are also employed, while sometimes two parts of port wine to one of water are found effective. To these might be added hundreds of others, for as leucorrhœa is very common so also there are a multitude of cures for it. All these, however, must be varied, changed, and alternated according to circumstances, and all sorts of shifts and changes must be made in order to render the treatment successful; for, while a very simple thing may sometimes

accomplish a cure, at others the disease is so obstinate as to resist almost every application. In general the cause of the disease should first be definitely ascertained, and then the various remedies should be tried until success be attained.

One of the most desirable objects to be attained in the treatment of leucorrhœa is the restoration of the general health. Proper care should be taken to avoid the remote causes of the disease, and attention should be paid to cleanliness by washing the parts frequently with cold water. When there are excoriations, milk and water, or lead water, may be employed as a wash. When there is languor, with chilliness, friction with the flesh-brush, and wearing flannel next the skin, should be resorted to. All improper habits should be corrected, everything in the way of food, drink, or otherwise, that tends to relax the parts should be avoided, the clothing should be comfortable but not too warm, the mattress should be preferred to the feather-bed, early retiring to bed and early rising from it should be practised, and such daily exercise should be taken as the strength will permit, in carriage, on horseback, or in some form. Care should be taken that only pure air is breathed, and when practicable the air of the country should be enjoyed. Sea-bathing and the sea-air have also been found very efficacious in numerous cases. The diet should be cordial and nourishing, generally tea and coffee and other warm drinks of a relaxing nature should be avoided, while, under proper guidance, the prudent use of genuine claret, port, and some other wines and spirituous beverages may be found beneficial. It should always be remembered that very often, to effect a radical and permanent cure, much more will depend upon the production of a modification

or alteration in the action of the system by a change of the habits, mode of life, and diet of the patient, than upon the employment of medicines.

CHAPTER XVIII.

MASTURBATION—SEXUAL EXCESSES— SPERMATORRHOEA.

In addition to the diseases already described, it is necessary here to allude to certain practices and habits, which though not of themselves classed as diseases, lead to the most serious and often fatal consequences. Of these, masturbation and sexual excess are the most prominent.

MASTURBATION.

This habit has been known under a variety of names, such as *self-abuse*, *self-pollution*, *solitary indulgence*, *secret vice*, *errors of youth*, etc.; and sometimes, though without much apparent propriety, as *onanism*, derived from the conduct ascribed to Onan, as narrated in the Bible. It seems to be one of those impure practices which have been working their evil effects from time immemorial among the youths of every race and nation, and is defined as consisting in the production of sexual excitement by an unnatural application of friction. There are many ways in which a knowledge of this thing may be acquired, and it seems absurd to assign so much importance to the error that such knowledge is generally imparted or taught. There are certain instances recorded where it was acquired

even before puberty, but, as an almost universal rule, it may be said that, unless actually imparted, the possibility of acquiring it before that time is very remote. From puberty forward, however, at which time the sexual passion is being developed into an activity before unfelt, any accidental circumstance may impart it, and it has even been asserted that, sooner or later, such knowledge is acquired by all, independent of any teaching or instruction. It is therefore extremely unfortunate that, in civilized communities, our youths should be regarded as too young to be instructed concerning the evil consequences of this habit, while they are nevertheless old enough to obtain a knowledge of the habit itself. The cases may be regarded as rare where the youth has even the remotest suspicion that the act is attended by any danger, and hence, from his first knowledge of it, it is repeated from time to time until it becomes a confirmed habit. It seems to be an incident inseparable from all acquired habits that they grow in strength with each repetition. This is peculiarly the case with masturbation, and frequently, by the time the youth accidentally attains a knowledge of the evils likely to result from it, the habit is so confirmed that it requires a great degree of moral force to abandon it. Indeed, one of the most deplorable consequences of the habit is its tendency to weaken the powers of resistance and to occasion an obtuse state of the moral faculties, so that it often happens that the practice is persisted in even after a full knowledge of the evils sure to follow from it has been attained. It has even been said that in a multitude of cases it is persisted in until marriage, or until the system is completely broken down, while many cases are known where (the individual having been endowed

with a strong and vigorous constitution) it was indulged in, to a greater or less extent, up to the age of twenty-five or thirty, or until the sexual passion abated in consequence of a diminution or total loss of sexual power.

It would be an endless task to enumerate all the evil effects that may follow from the practice of masturbation. It has been truly said by the medical superintendent of an insane asylum, that "there is scarcely an ailment, and, save some specific forms of disease, scarcely a serious disorder, which has not been observed as a direct consequence of this fell destroyer." In youth any unusual drain upon the system must necessarily stint the growth and development of all the parts and organs of the body, and the depleting process kept up by this practice is especially calculated to produce such effects. Even after the body and all its organs have been fully developed and matured, if such a drain be brought to bear upon them they soon begin to fail in the performance of their functions. From all this it necessarily follows that almost every evil to which the system is liable may result from the depletion produced by masturbation. To particularize in order the various effects that may follow from it is simply impossible, because no order is observed in their occurrence; and there is every probability that the theory is true, which alleges that if there be a weak spot, part, or organ in the body of the individual addicted to the habit, this usually is the first to exhibit symptoms of being affected. Hence, in some cases the indications are that the stomach is diseased, in others it appears to be the liver, the breast, the lungs, the brain, or any other organ or part of the body, while in others still all the evidences of a combination of affections

are apparent; so that it not unfrequently happens that one person is treated for diseases of the stomach, another for disorders of the liver, and so on through almost the entire catalogue of diseases, while, in reality, the symptoms indicative of these complaints are simply the result of the depletion of the system occasioned by the practice of masturbation.

It may, however, be desirable that some of the effects of self-abuse should be more specifically designated here, for it is in many instances necessary that the means by which the practice may be detected should be known, while in others a knowledge of its certain, probable, and possible consequences may lead to its abandonment. One of its most prominent and invariable effects is debility of body and mind, and this may be manifested to an extent more or less limited. Hence the youth addicted to the habit becomes weakened, is soon fatigued, and gets out of breath upon very ordinary exertion; he becomes indolent, inactive, or lazy; he requires much sleep, and his nights are often spent in restlessness, so that he rises in the morning feeling unrefreshed and languid; his muscular powers diminish; weakness of the limbs and back takes place, and he loses his activity and firmness of step and elasticity of gait; headache and dizziness are often experienced, and the circulation becomes irregular, occasioning palpitations of the heart. Corresponding effects are likewise produced upon the mind, and an indefinable, clouded, obscure, muddy oppression of the brain takes place; he becomes dull, heavy, stupid, listless, indifferent, forgetful; loses his taste for society and seeks to be alone, is apparently dissatisfied, and becomes peevish, morose, and unhappy, despondent, melancholy, or hypochondriacal, or frequently changes

in mood and temper, so that at one time he is animated and hopeful in spirits, and at another despondent and despairing, giving way to sadness, sighing, or weeping, while the general feeling is that of mental solicitude. From the commencement of the practice, the appearance gradually undergoes a change. He becomes pale, and the countenance assumes an anxious expression; the face is often marred by the constant presence of pimples or pustules, and sometimes heated by unnatural flushes in consequence of irregularity in the circulation; the cheeks become sunken, the features sharpened, and a haggard or cadaverous appearance is presented; the eyes assume a vacant expression, and become weakened, dull, bleared or blood-shot, and often dark spots or web-like objects appear to be floating before them, while the lids frequently exhibit swelling or soreness, are often glued together in the morning, and a whitish matter collects in the corners and a dark circle appears on the lower lid; the process of emaciation gradually proceeds, the skin becomes shrunken, of a yellowish or tawny hue, and dry and feverish; the muscles lose their solidity, and become soft, relaxed, and flabby; the shoulders project forward and the chest recedes, giving to the figure and posture a stooping appearance; the knees become weak, the gait irregular and tottering, and the whole being appears to be undergoing a process of deterioration. Hence an ancient author said of the person addicted to masturbation, that "in the flower of his youth he becomes affected with the infirmities of age." Finally the appearance or actual condition of organic or functional disease is brought about, and innumerable aches and pains never felt before are experienced. There may be derangement of the

stomach, indigestion, loss of appetite, dyspepsia, impaired nutrition, irregularity of the bowels, occasional diarrhoea or obstinate costiveness, flatulence, retention or involuntary flow of urine, fainting fits, convulsions, St Vitus' dance, epilepsy, paralysis, apoplexy, diseases of the five senses, of the spine, liver, heart, and lungs, consumption, merasmus, or, in short, as an old physician writes, "all kinds of painful affections."

A not unfrequent result of masturbation is insanity, and in the annual reports of every institution for the reception of the insane numerous cases are given illustrating this fact. These cases uniformly indicate the worst forms of insanity, and the per centage of cures is much less than in cases where the reason is destroyed by other causes. Observations made in the Massachusetts Lunatic Asylum give the per centage as follows: In insanity occasioned by drunkenness the cures were *thirty* per cent.; by domestic affliction, *fifty-nine* per cent.; by general ill health, *sixty-three* per cent.; by religious excitement, *sixty* per cent.; and by masturbation, only *twenty-seven* per cent. In one of the annual reports of a prominent State asylum the difficulties met with in all efforts directed towards the recovery of the insane from this cause are noticed as follows:

"The causes of insanity may be divided into voluntary and involuntary. Of the former the principal are intemperance and the secret vice; other causes may be of this class, such as hazardous speculation, many religious vagaries, imprudent exposures, and irregularities. None are so prominent as the two first named, and none so fully stain the character with guilt, which even the occurrence of hopeless disease can hardly wipe away. Intem-

perance disorders the senses, and induces apoplexy, epilepsy, and palsy. The cases from this cause are about as favorable for recovery as the majority of others, but are most sure to return if the habit of intemperance recurs. The secret vice produces the very worst form of insanity, because it is so difficult to avoid the continuance of the cause, and because the energies of the system are more prostrated by it than by almost any other cause. Such patients become degraded animals, so entirely abandoned to the habit, that hopeless dementia and drivelling idiocy generally follow. A few can be influenced to abandon the practice, and a few others can be cured in spite of it; but in almost all cases the disease will become worse, and these dreadful consequences will ensue. The secret vice, though doubtless a frequent cause of insanity, and of other severe and fatal diseases far more than is generally supposed, is most operative in preventing recovery from insanity, arising from this and other causes. It is extensively and alarmingly the result of an active propensity excited by disease and unrestrained by reason, moral influences, or self-respect. Many cases of a favorable character progress towards recovery till this practice is commenced, then the patient becomes listless, is inclined to lie down or sit in a bent position, walks moderately, looks feeble and feels weak and miserable. His mind loses its energies, its scope is circumscribed, more and more, till this indulgence occupies all his thoughts, and the remnant of all the physical powers are concentrated on this single effort of gross and debased animal nature."

It may here be added, that the practice of this habit is generally speedily productive of insanity in those instances where there is any such heredi-

tary taint in the family, while it not unfrequently exerts such a powerful influence upon the strongest minds as to gradually dethrone the reason. The records of asylums abound in melancholy tales of the most promising youths who were thus reduced from the fairest prospects in life to the lowest conditions of human existence. While, however, statistics fully show the number of persons made insane through the practice of this vice to be enormous, it has nevertheless been very truly said that "the evils which it works in a direct and positive manner are not so appreciable, perhaps, as those which it effects in an indirect and negative way. For one victim which it leads down to the depths of idiocy, there are scores and hundreds whom it makes shamefaced, languid, irresolute, and inefficient for any high purpose of life."

The direct effect of the habit upon the sexual organs is to keep them in a state of constant irritation and excitement, under which they become weakened, or literally wear out. Often the testes diminish in size as well as in power, and become shrunken or hardened, or waste away. Frequently the continual flow of blood to the parts which is thus occasioned results in varicocele, or other local affections. Almost invariable spermatorrhoea is engendered in one of its forms, and thus the drain is kept up even though the habit be abandoned. When the habit has been indulged in for some time, it is a rule to which there are but few, if any, exceptions, that it occasions a loss of sexual power, to a greater or less degree, so that when the years of full maturity are attained, and the time has arrived when the maximum vigor should exist, the powers are faded and weakened, so that the man of thirty years lacks the vigor common to those men of sixty who

have lived cleanly lives. In many cases these powers are entirely lost, and hopeless impotency predominates at an age which nature designed as the prime of vigorous manhood.

Even in the early periods of the habit the youth becomes unfitted for the enjoyments, pursuits, or occupations of his age, and as he advances to the years when he is called upon to enter the world of enterprise, he finds that he lacks the energy, the power, the will and the courage required for successful competition. All his physical powers have been weakened, his intellectual faculties impaired, and he is weak and timid as a woman. More mortifying still, he often finds himself as much disqualified for rearing a family as he is for business pursuits. His sexual weakness debars him from matrimony, or, if he marries, he is disqualified for its responsibilities and enjoyments. Hence he often becomes jealous, selfish, envious, revengeful, and rancorous, not only embittering his own life but also that of the unfortunate companion who is united to him; and still, as if nature had not yet sufficiently revenged herself for the oft-repeated violation of her laws, if his union chances to be blessed with children, the probabilities are that they will inherit his own weaknesses and defects. It is a law of reproduction that "like produces like," and the exceptional instances are seldom seen where the weak, debilitated, and enfeebled parent produces the strong, robust, and healthy children. "With what encouragement to virtue, therefore," said an ancient author, "may young people behold a man at the age of fourscore, with a wife of like antiquity, both blessed with healthy, hale constitutions, and fresh, wholesome countenances, with sound minds and perfect senses, active limbs, and of cheerful tempers,

presiding over a healthy progeny, perhaps to the third or fourth generation, and all these blessings owing to their temperance and continence."

It is unfortunately true that this habit is not confined to males alone, but also prevails among females. While, in the latter, the evil effects attending it are more limited in number, they are nevertheless very dangerous in character. In the article on the subject of insanity in COPELAND'S *Dictionary of Practical Medicine*, the author makes use of the following language respecting masturbation: "It is even more prevalent in the female than in the male sex; and in the former it usually occasions various disorders connected with the sexual organs—as leucorrhœa; displacement of the uterus; difficult, or disordered, or suppressed, or profuse menstruation; both regular and irregular hysteria, catalepsy, ecstasis, vertigo, various states of disordered sensibility, etc., before it gives rise to mental disorder. In both sexes, epilepsy often precedes insanity from this cause; and either it or general paralysis often complicates the advanced progress of the mental disorder, when thus occasioned. Melancholia, the several grades of dementia especially imbecility and monomania, are the more frequent forms of derangement proceeding from a vice, which not only prostrates the physical powers, but also impairs the intellect, debases the moral affections, and altogether degrades the individual in the scale of social existence, even when manifest insanity does not arise from it." In her lectures to ladies on the subjects of anatomy and physiology, Mrs. GOVE says that "there is reason to believe that, in nine cases out of ten, those unhappy females who are tenants of houses of ill-fame, have been victims of this vice in the

first place." A not unfrequent consequence of the habit is nymphomania, which may lead to a multiplicity of vices. It also tends to disqualify the female for the married state, and may wholly unfit her for the main end of her existence and utmost honor of her sex—which is, maternity.

Advice.—Masturbation prevails principally among the young, who are ignorant of the consequences to which it may lead. These consequences can be mitigated or avoided only by an abandonment of the habit. In many instances, in youth, even where self abuse had begun to exhibit some of its effects, its abandonment alone served to arrest its evil consequences, and enabled the natural powers of the system to remove incipient morbid conditions and re-establish a state of perfect health. To secure this abandonment, however, is often the real difficulty, and here the main dependence must be upon parents or those having charge of the young, and upon imparting proper information as to the immediate and ultimate evils that will follow if the practice be persisted in. There are, certainly, many cases where the habit acquires such mastery that parental efforts, to be successful, must be exercised with considerable discretion. It is sometimes supposed that the best policy consists in remaining silent and withholding all information upon the subject, or in altogether ignoring the possible existence of such a practice, but the statistics of our insane asylums seem to indicate that this is a serious error. These statistics show that among those made insane by the practice of masturbation, there are numbers of all professions, occupations, and pursuits, each calling contributing its full quota, excepting only the medical profession, and this exception is supposed to be entirely owing to the

knowledge which those of that profession speedily acquire concerning this subject.

It has, unfortunately, been too much the practice to depict self-abuse as a heinous crime—as something so shamefully criminal as to render its victim infamous. That it is a vice of a most deplorable character there can be no doubt, but it is not by holding it up as a crime so utterly degrading, that the confidence of the youth is secured. "No person," says an ancient philosopher, "is so bad as to wish to be thought bad," and the undoubted tendency of depicting the vice of self-abuse as the utmost limit of depravity, is to repel all confidence. Then, again, it is not true, and, such being the case, can accomplish but little good. A more truthful, generous, and kindly course will be found much more effective in producing good results.

It is the duty of the parent to guard the youth against error and direct him in the right path. Hence a supervisory care should be observed over his actions, and when suspicion arises that this vice is indulged in, the consequences certain to follow from it should be fully impressed upon his mind—not rudely, violently, nor so as to repel all confidence, but gently and kindly, and so as to secure the same confidence that usually exists between parent and child in other matters. Denunciation, or punishment, will accomplish no good, and is generally calculated to increase the evil. The same may be said of attempts to shame the youth, for shame degrades him in his own opinion, and reform seldom follows as the result of degradation. The true policy consists in efforts to elevate him, not in attempts to degrade him. This is best done by instructing him in the fact that persistence in the vice will injure his health, and finally lead to the

destruction both of his physical and mental powers—in enlightening his understanding and reason, and arousing his moral faculties. It may here be stated as the general experience, that parental counsel, if judiciously given, seldom fails in inducing the youth to abandon the habit.

Where the practice of masturbation has resulted in other evils, these must be treated according to their individual indications; but no treatment can be of any avail so long as the habit is continued. The first thing imperatively required is its total abandonment, and so firm is the hold which it sometimes secures over its victim that its abandonment requires all the powers of mind he can command. Determined resolutions are often made after every repetition of the act only to be broken again and again. In these efforts to break off the habit, much assistance may be derived from proper attention to bathing, to diet, and to clothing. Self abuse occasions an unnatural determination of blood to the parts, and this serves to provoke desire and keep up a state of excitement. Hence bathing the parts with cold water before retiring to bed, or at any time during the night when inclination prompts a repetition of the act, has been found useful in checking desire; and friction applied to the body with a rough towel, with the hands, or otherwise, physical exercise, warming the feet, or anything that serves to secure a more general circulation of the blood, will have a similar effect. It has therefore been recommended that the sleeping apartment should always contain the means or facilities of applying cold water, or friction of the body, or of indulging in some species of exercise. The diet should be so regulated as to avoid all rich and stimulating food, spices, liquors, etc., and should

be simple and nourishing, while all indulgence to excess should be shunned. The clothing around the parts should not be over-warm, nor rough and irritating. Above all, the mental and moral feelings and emotions should be properly guided, and everything of an exciting tendency, whether in the form of association, conversation, reading, or otherwise, should be scrupulously guarded against.

It sometimes unfortunately happens that even after the person has ceased to be voluntarily guilty of the habit, it may be committed involuntarily in an unconscious or half unconscious state—while he is asleep, or in a condition defined as half asleep and half awake. The means calculated to obviate this difficulty are, properly regulating the thoughts, pleasant exercise or employment during the day, light suppers, and everything that serves to promote health of body and of mind, and thus tends to secure sound and healthful sleep. If these fail, drawers buttoned behind may be worn, or the hands may be muffled with rough gloves; and it may here be added that cauterizing the prepuce has been resorted to by patients determined to master the habit, so as to render the act painful and prevent its being committed in an unconscious state. Medicines are also sometimes used to subdue the passions, but these possess nothing to especially recommend them, and to be harmlessly efficient they can only be employed under proper medical direction.

SEXUAL EXCESS.

This vice is usually classed with that of masturbation, in consequence of its tendencies being similar to those of that evil habit. In both cases there is a depletion of the system produced by an excessive loss of the seminal fluid, the only difference being in the

manner in which this depletion is effected. While masturbation is, of itself, unnatural, sexual excess is only so because it is excess; so that of the two vices the former is found to be the more speedily destructive, although many cases are reported where a few months of indulgence in the latter resulted in the destruction of the powers of the system or proved wholly fatal.

Of the causes assigned as productive of sexual excess, none, perhaps, is so prominent as ignorance of its consequences. The amount of absolute evil and suffering which is in this manner produced, and that, too, among persons whose supposed intelligence indicates less ignorance upon this subject, is often amazing even to the professional man. "Many a man," says ACRON, "has, until his marriage, lived a most continent life—so has his wife. But as soon as they are wedded, intercourse is indulged in night after night, neither party having any idea that this is an excess which the system of neither can bear, and which, to the man, at least, is ruin. The practice is continued in until health is impaired, sometimes permanently, and when a patient is at last obliged to seek medical advice, he is thunderstruck at learning that his sufferings arise from such a cause as this." In promiscuous indulgence, similar excesses are very speedily attended by their evil effects. "A short and merry life," is a common expression in acknowledgment of the fatal consequences following such indulgences, although not every one may possess the peculiar penetration required to see much merriment in a life which is soon run out, and seldom, if ever, terminated without first undergoing innumerable bodily and mental tortures.

So intimate is the sympathy of every part and

organ of the body with the sexual system, that the abuse of the latter is often referred to as productive of more disease than any other known cause. The many evil effects that may result from sexual excess have already been designated. In preceding chapters numerous references have been made to this cause as productive of organic and functional diseases and derangements in both the male and the female. It is, therefore, only necessary to add here that most, if not all, the consequences enumerated as resulting from masturbation, may also be occasioned by this species of sexual abuse.

Sexual excesses in the married are especially deplorable. While single men or women addicted to this vice soon ruin or destroy themselves, the married not only afflict themselves but also transmit to their offspring puny frames and feeble constitutions—the seeds of diseases which soon terminate existence or embitter a life which is invariably short. "Who," writes Dr. DIXON, "can say that these excesses are not often followed by those direful diseases, insanity and consumption? The records of our madhouses, and the melancholy deaths by consumption, of the newly married, bear ample witness to the truth of such assertion. Are they not transmitted to posterity? Look at the frequent mental imbecility, and the pallid hue, and attenuated form of the children who are the earlier products of marriage, and see the parents vibrating between life and the grave, until the candid physician, or the terrors of death, teach them to abstain, and nature gathers up her shattered powers, and asserts anew her control of the organism. Should the lesson suffice and mature age be attained, again look at the offspring; if the first children survive, the last would not seem to be born of the same parents, so

different are they in vigor and sprightliness ; and in maturer life, almost invariably more intellectual."

In all cases of sexual excess there is but one remedy, and that consists in abstinence or moderation. Where it has led to diseased conditions, these must be treated with reference to their character and the state of the affected person. Some easy means of checking desire have been designated in the preceding section, and these may always be resorted to with safety.

SPERMATORRHOEA.

This term has been used by professional men in a very extended and also in a more limited sense, and hence it becomes necessary to say that by spermatorrhoea is here meant a diseased condition exhibiting itself in involuntary emissions, or involuntary losses, of the seminal fluid. This disease is also sometimes designated as *seminal weakness*, *seminal losses*, *involuntary emissions*, and occasionally by names quite applicable to some of its effects but wholly inappropriate when applied to the disease itself. It can hardly be justly assumed that any merely accidental emission constitutes an indication or state of disease, although some have been inclined to entertain such an opinion. It is quite probable that such accidental emissions are an effort of nature for some purpose, as the testimony of experience clearly indicates that they occur independently of any cause traceable to physical or mental acts of the individual. It is said by some that there is a constant accumulation of semen in the seminal vesicles, from whence it is absorbed through the lymphatic vessels, and adds strength to the body. Others assert that this accumulation may produce a plethoric condition or over-fullness

of the seminal vesicles, so that they will exercise an effort to obtain relief resulting in an emission. Others, still, contend that the semen is only accumulated during the act of coition, and hence any emission occurring involuntarily is indicative of a morbid condition, although that condition may be very limited in extent. Whatever there may be of truth or error in these theories, it is within the experience of all that such emissions will occur, alike in those lasciviously inclined and in those whose inclinations are as limited in this respect as vigorous youth or manhood will permit. It has been said, indeed, that they must occur in all continent men, if strictly healthy, being more frequent in those whose temperments are designated as warm. Some writers even assume that in youth the practice of masturbation is often originated or first learnt in consequence of an involuntary emission occurring either under a state of excitement, through some accidental friction, or under circumstances where the youth is not cognizant of any such cause. Where, however, there is apparently no disease, involuntary emissions rarely occur, and the intervals between them are of considerable and indefinite extent. It is not always easy to tell, in the beginning, when they are indicative of disease, and perhaps the best criterion that can be given is that of a French author, who says: "When they arise from true spermatic plethora, they often relieve erotic excitement, with its accompanying agitation, anxiety, uneasiness, and undefinable trouble in all the functions. They are followed by a general feeling of comfort ; the head becomes clearer, the ideas more rapid, and the motions more nimble ; there is more inclination to amusement, and to every kind of occupation. I admit that nocturnal pollutions

do not often produce such good effects, but then they are not often the result of spermatic plethora." In the condition indicative of the incipient stage of disease "the evacuations produce effects quite opposite to those experienced in the beginning. There are, on waking, feelings of discontent, idleness, weight in the head, disorder in the ideas, etc., but this condition passes off in the course of the day, and the person is quite well on the following morning. After a time, these effects become more serious and lasting, and two or three days are required to remove them completely."

The parts more immediately affected in spermatorrhœa are the ejaculatory ducts. These ducts become relaxed, and lose their powers of retention, and the semen is thus permitted to pass through them and escape through the urethra. This escape may take place in different ways, and hence two forms of the disease are generally defined. The first is, where the relaxation or loss of retentive power of the ducts is but partial, in which case the emissions will occur in quantities readily perceptible to the sight and generally experienced by the feelings. In this form of the disease, the emissions usually take place at night, under some agitating influence, as, for instance, a dream; but as the disease advances, they may also occur in the day time under any exciting influence. The second form is, where the relaxation is total, or so great that the fluid escapes from the seminal vesicles more or less constantly, generally without being accompanied by any sensation. In this form, it may literally be dripping away continually from the urethral orifice, but usually it is passed off with the urine. It may be constantly finding its way into the bladder, or during micturition it may enter the urethra, in

either case being evacuated with the urine and wholly unperceived.

Different causes have been assigned as producing spermatorrhœa, some of which seem very fictitious. Thus it has been said that entire continence or abstinence from sexual indulgence may induce the disease, because, in a state of health and vigor, such abstinence may be followed by involuntary nocturnal emissions, and although these may at first occur at periods far apart, by occurring at all they will tend to weaken the vessels so that they may subsequently occur so frequently or become so constant as to constitute a state of disease. This, however, is so highly improbable and seems so at variance with the general rule of nature, the constant tendency of which is towards the establishment of healthy conditions and never towards the origination of unhealthy ones, that reference to it is here made simply because the error has been extensively propagated. From the parts immediately affected in spermatorrhœa it will readily be perceived that any disease of the genital organs may occasion it, and hence it is found that such a result often follows from venereal diseases, or from their consequences. It has also been ascribed to affections in other parts contiguous to the genital organs, such as ascarides in the rectum, long continued constipation, piles, gravel, etc. Diseases of the general system may likewise give rise to it. From the peculiar sympathy existing between the nervous system and the genital organs, anything that affects the former may occasion spermatorrhœa, and hence it has been ascribed to much mental exertion, agitation, anxiety, and to injuries to and affections of the brain. The injudicious use of certain medicines, such as phosphorus, opium, cantharides,

etc., have also been credited with tending to produce it, and so has the excessive use of alcohol, or tobacco. In general, it may be said that anything which tends to relax, or to injuriously affect, the ejaculatory ducts or seminal vesicles, also tends to the production of spermatorrhœa. While there are doubtless many causes which may be productive of this disease, in the great majority of cases where it exists it is unquestionably due to the practice of masturbation or to sexual excess, and hence it is almost exclusively attributed to one or the other of these two causes.

A detail here of all the effects or consequences that may result from spermatorrhœa would simply be a repetition of those enumerated as capable of being produced by masturbation, and therefore it is only necessary to refer to that enumeration. The different organic derangements which may be produced by it have been referred to in the preceding sections on organic diseases.

Remedies and Treatment.—In the treatment of spermatorrhœa much must necessarily depend upon the length of time the disease has existed and the condition to which it has advanced. In most cases, where the disease has not progressed too far, the only treatment required can be successfully applied by the affected person himself. It usually first manifests itself by frequently recurring nocturnal emissions, and these are nearly always preceded or attended by lascivious dreams. Such emissions may generally be avoided by removing the exciting causes which occasion them. These are often either known to the person, or they may be ascertained by a little attention. Very frequently they exist in a stimulating diet and more frequently still in improper impressions previously made upon

and existing in the mind. All causes of this kind can very readily be avoided by the person with very ordinary care. A little attention to diet will soon enable him to select such articles of food as will supply all the nourishment needed by the system and be free from stimulating properties; much less attention should be needed to avoid exciting associations, conversations, and reading; and a little effort of the will should soon enable him to acquire the necessary control over impure wanderings of the mind and give a healthful direction to his moral faculties. These means, when added to such as tend to promote the general health, are nearly always effective where the disease has not acquired too much power.

Proper attention should be promptly directed to the general health. Often the debility of the system keeps up the complaint, and indeed where debility and the disease co-exist there is but little prospect of a cure until the former condition be removed. The general health can only be promoted by proper attention to the breathing of pure air, to diet, to regular exercise or moderate labor, to bathing, and to such special circumstances as are peculiar to each case. By thus building up the system, that healthy action of nature will be re-established which will enable it to correct specific local affections.

Where the disease arises from constipation, ascariides in the rectum, piles, or causes of a like character, these can generally be removed by means very readily available. Of course, where it is owing to any bad habits, of whatever nature, such habits must be abandoned, and all the thoughts and feelings which they engender must be controlled and directed into more wholesome channels.

It often happens that the affected person's mind is assailed by numerous fears, and he becomes badly scared, then discouraged, or melancholy, and this condition is apt to be fostered by everything which he reads upon the subject of his complaint. He is prone to brood over his affection in solitude, its very nature serving to deter him from seeking counsel or sympathy, and so he works himself into a state of mind really distressing and injurious. All this must be avoided. Nothing is gained by fretting, while, on the contrary, it will retard every effort made towards the restoration of his health. The matter should be dismissed from his mind as much as is practicable, pleasing pursuits should be engaged in, and an even mental and moral tone should be maintained.

The local applications of cold water, and the other means of checking desire referred to in the section on masturbation, may always be used to advantage, for such desires are generally followed by dreams and emissions. Especially should attention be paid to the bedding, so as to avoid all extra warmth, for sleeping in over warm beds has a greatly exciting influence and is very apt to occasion emissions. A hard mattress is to be preferred to feathers, and the covering should be just sufficient to secure warmth and comfort. The habits of promptly awaking and early rising should be acquired, for it not unfrequently is the case that emissions occur in a semi-unconscious state, or in the morning after the person has waked up and then fallen into an unsound slumber again. The condition of health which is productive of sound and healthful sleep is never attended by those semi-unconscious states which are so annoying in this disease. In such a condition, by very ordinary care to the habits, and especially

by respecting the stomach, avoiding heavy or late suppers, and eating or drinking^d nothing of any kind shortly before retiring, the full amount of sleep required is readily secured without interruption: then, when the person awakes, he does so promptly and is rested and refreshed, and prepared to rise for the day, however early in the morning it may be. Therefore, every means should be resorted to calculated to secure this condition of health, and, in the meantime, where the disposition to such nocturnal semi-unconscious states exists, the body and mind should be prepared during the day for sound sleep at night by a proper exercise of both, and the sponge bath, with the necessary friction, should be nightly resorted to. When awakened during the night, or, as is more frequently the case, towards morning, the patient should rise either for the day or to air his bed, and if the least excited he should have recourse to the local application of moderately cold water, to friction of the body, or to some means of exercise which will secure a general circulation of the blood, before going to sleep again. In this way the occurrence of an emission, which is always probable under such circumstances, may be prevented.

Various means have been recommended for the application of cold water to the parts, one of the most convenient of which is found in the use of the sponge, and "one of the best, both for the purpose of strengthening the genitals and also for relieving constipation, consists in what is termed the *ascending douche*; that is, by a stream or jet directed upwards. This must be made to play forcibly on the perineum and against the anus, by the patient sitting over the jet. The effects of this treatment, after a time, are often strikingly benefi-

cial. Patients who had previously never passed a night without emissions have been known to remain for two weeks without experiencing anything of the kind; and the most obstinate constipation, in some instances of near three weeks' duration, has been completely cured by it in less than a month. It is, in fact, one of the most valuable remedies in the treatment of spermatorrhoea. Those who cannot employ a proper apparatus may use a large and powerful syringe, bent at right angles, so that the jet can be thrown up against the perineum, scrotum, and anus. It should be used morning and night, for about five minutes, or at any time during the night, when its use is rendered desirable."

The position in sleep also frequently becomes a matter of considerable importance. From the location of the heart, stomach, and lungs, it is concluded that lying on the right side is always the proper position in bed. It has certainly been observed that "lying on the back is very apt to cause emissions by the heat it produces in the loins. So well aware are some persons of this, that they invent peculiar contrivances to prevent them ever resting on the back even for a moment. Some have been known to wear a broad leather belt at night, with spikes or tacks on the inside behind, so that if they turned on the back while asleep, these would hurt and wake them up. Others have worn a pointed piece of wood, so adjusted that they could not turn on the back at all, and by these means avoided the emissions that used to occur almost nightly." Certain other mechanical devices have also been invented to prevent nocturnal emissions, based upon a compression of the parts, but these generally possess very little to recommend them, and are often productive of positively injurious results.

Such are the means of self-cure of which the patient can always avail himself, and if properly observed and persisted in they will generally prove serviceable, and be effective in accomplishing a cure. In the great majority of cases they will produce much more good than the taking of medicines, because the effective drugs generally used are often calculated to prove more or less injurious to the system. The cases which cannot thus be cured may be regarded as of an obstinate nature in which resort should be had to the proper advice and skill. No specific can possibly be given for a disease which is dependent upon so many causes, the consequences of which are so diverse, and which so variously affects the system. It may be unfortunate that patients affected with this disease should so often be misled in their efforts to secure proper medical advice; but this must probably continue to be the case so long as they will be more disposed to put their trust in unknown and distant strangers, of whose skill they know nothing beyond what these strangers may modestly say of themselves, than in those advisers and friends more immediately accessible.

It may here be added that marriage is often indiscriminately recommended to patients affected with spermatorrhoea. It is true that in some cases marriage may accomplish much good, but in many more it may also serve to add to the miseries of the individual. As a rule, before marriage be contracted a cure of the disease should be effected.

CHAPTER XIX.

SATYRIASIS—NYMPHOMANIA—EROTOMANIA.

THESE three affections correspond so much with each other in their manifestations that they may be properly arranged in one chapter.

SATYRIASIS.

This affection is confined to males, and has been defined "as a disease of the sexual organs, or of some of the adjoining parts, which keeps them in a constant state of irritation, sometimes so great that the patient cannot obtain the slightest relief, either sleeping or awake, but is kept the whole time in a state of furious excitement." The different causes which may be directly instrumental in producing this disease are but little comprehended, although it has been ascribed to affections of the urethra and prostate gland, to gravel and to the piles, to masturbation and sexual excesses, to the improper use of certain drugs acting upon the sexual organs, and in some cases to the use of tobacco, etc. "The irritation," says Dr. CURLING, "attending the morbid condition of the mucous membrane of the prostatic portions of the urethra, tends, in a very material degree, to excite both the excessive seminal discharge and the secretions of the prostate, and to produce that morbid craving for indulgence and abuse, which persons who have brought themselves to this state find so difficult to repress and resist. It is well known that any irritation at the orifice of an excretory duct usually acts as a stimulus to the

secretion of the gland. Thus, hurtful matter in the duodenum produces a flow of bile; and a foreign body in the conjunctiva, as an inverted eyelash, a discharge of tears. So it is with the testes when irritation exists at the orifices of their excretory ducts. The disorder at this part, moreover, appears to react on the brain, and to become in part the cause of the patient's mind being constantly occupied with subjects of sexual excitement, and of his indifference and apathy to other matters." The same author, in referring to the effects of this singular affection, says: "One would be loath to offer any apology for the vicious habits and indulgences to which, it is well known, old men are occasionally addicted. I cannot but think, however, that, in many instances, these cases are not undeserving of professional sympathy, and that the erotic longings which sometimes continue to distress the aged, long after the period at which, in the course of nature, they should have ceased, depend as much on physical infirmity as mental depravity, the former inciting and producing the morbid desires. If these propensities were regarded and treated as symptoms of disease (and that they frequently occur in connection with affections of the urinary passage is well known to practical surgeons), I believe they would often subside, and the distressing results to which they lead would be altogether avoided."

Satyriasis is regarded as a species of madness, in which the moral faculties are overpowered by sexual passion engendered by local disease, so that no effort of the will seems strong enough to overcome the morbid feeling, and the sufferer is apt to be driven to the commission of strange immoralities and even crimes. It is believed that in this

disease exists the hidden cause, in many cases, of those apparently unaccountable immoralities and crimes, the exposures of which frequently startle and astound society. Men who had never been suspected of any improprieties are suddenly convicted of strangely lewd and criminal practices, through which, in a single hour, the best of characters and the highest social positions are forever lost, and society is amazed and marvels at occurrences for which it is utterly unable to account. In cases of this kind a scientific examination has frequently revealed a condition of disease which speedily resolved the unaccountable marvel into the legitimate effect of a pre-existing cause. For one extreme case of this character which is brought to light, there are, however, hundreds where the individual is driven into less criminal indulgences and vices, and these, though they may fail to receive social condemnation, nevertheless carry with them their own punishments and revenges. It is not unfrequently the case that men of all ages are encountered who are entirely absorbed by their passions and are apparently literally driven into immoral practices. It is unfortunately true that such conditions are generally to be ascribed to moral depravity, and hence are eminently deserving of condemnation and punishment; but it is also true that they frequently arise from satyriasis, or preternatural local excitement occasioned by actual disease, and hence become a proper subject for medical treatment. Where this disease exists it has been observed that "it is of no use reasoning with the patient, and telling him to control himself, unless the exciting cause of the complaint be also corrected; it would, in short, be of little more use than telling him he must not give way to a diarrhoea,

or any other morbid action." As a means of correcting the evil, attention should be paid to the diet, the habits, and to bathing. A plain vegetable, farinaceous and fruit diet may be observed to advantage, and all spices, liquors, and stimulating substances should be avoided. Cooling medicines may be found of much service, such as citrate of magnesia, mineral waters, seidlitz powders, epsom salts, etc. The habits and mode of life should be such as to avoid everything tending to provoke excitement. Local bathing should be practised at least night and morning, or oftener, if practicable, warm water being preferable to cold because of the cooling reaction which follows its application. By such means the affection may generally be conquered and the power of self-control re-established; but it sometimes happens that the disease acquires a violence demanding a resort to more vigorous measures, and in such cases successful treatment may always be secured through some practical, common-sense physician.

NYMPHOMANIA.

This disease, also known as *furor uterinus*, is confined to females and corresponds with satyriasis in the male. It has been defined as a morbid and inordinate desire for venery. A number of causes are assigned as capable of producing it, while those immediately regarded as giving rise to it are irritability of the womb and vulva, or an unusual acrimony in the fluids of these parts, and enlargement or affections of the clitoris. Of all the diseases which may possibly afflict the female, this is calculated to lead to the most mortifying and humiliating consequences. It manifests itself in an unnatural desire for sexual indulgence, which is evi-

denced, while the reason of the patient still predominates, by her wanton appearance. Though silent or even melancholy in her deportment, her eyes and general expression too plainly betray the workings of unnatural longings and desires. These sometimes become so furious as to give rise to paroxysms in which all self-control is over-powered, and all sense of shame obliterated, so that she will act and talk in the most frantic manner, disregarding every restraint of decency alike in her actions and language, indulging in the most revolting obscenity in acts and words, and in turns scolding, crying, laughing, and exhibiting many of the symptoms common to hysteria. When the paroxysm subsides, shame and mortification ensue, and the sufferings thus occasioned are often more serious in their immediate effects than the disease itself, and have even been known to lead to self-destruction. In this condition of the disease but little can here be recommended to the patient beyond an immediate resort to such medical or surgical skill as the case may demand. The disease is always controllable by the use of drugs or lotions, or by a slight surgical operation, or mild cauterization of the clitoris.

The foregoing manifestations must be regarded as indicative of the worst form of the disease. That it may exist in milder degrees will be apparent, and when it does so exist it may well be recognized as even more dangerous. In the first case, its existence is palpably manifest and its very violence is calculated to urge a resort to the proper remedies as well as to secure to the patient the supervision and protection which her condition requires; while in the second case, it is less evident and may therefore gradually undermine the moral senses and lead

to lapses in morals which are alike destructive to the health and happiness of its victim. A case referred to by Dr. Gooch may serve as an illustration of this form of the disease as well as of the consequences to which it may lead. "Another lady," wrote that physician, "who consulted me, said she had always been brought up virtuously, and had hitherto been well disposed; but now a man could not pass without her experiencing those sensations which were alone her husband's right." The deplorable consequences to which such a condition may lead can readily be inferred. Authors conversant with the influence upon morals of this and other affections having a similar tendency, have frequently been led to assume, and perhaps with no small degree of accuracy, that much of the vice existent in the world owes its origin more to physical causes than to moral turpitude. In all cases of this kind a resort to proper treatment should be promptly had, as it furnishes the safest means not only of removing a serious annoyance but also of preventing possible consequences. The means recommended, of which the patient can always avail herself, include everything that tends to soothe or allay the irritation. Warm or cold water should be freely applied locally, and general bathing should be regularly indulged in, sea-bathing being preferable when practicable. Strict attention should be paid to the diet, which should be nourishing, but free from all irritating and stimulating tendencies. Spices, condiments, spirituous liquors, and everything that tends to add to the heat of the system should be avoided. Cooling medicines may be used, if necessary; and if such means fail, the surgeon may be required, or more violent means may be adopted under proper direction. In all these cases

a little judicious action in time may be instrumental in avoiding much future suffering, and even in escaping the mortifying consequences that invariably attend feminine errors in morals, no matter whether they result from moral defects or from physical disease.

EROTOMANIA.

This disease, some forms of which are commonly known as *love sickness*, gives rise to effects corresponding, in a greater or less degree, with those resulting from satyriasis and nymphomania. Its points of difference from these two affections are fully pointed out by Dr. COPELAND, in his description of erotomania, as follows: "Erotomania is a mental affection, in which amorous ideas are as fixed and dominant as religious ideas are in religious monomania or melancholia. Erotomania is very different from satyriasis and nymphomania. In the latter, the mischief is in the reproductive organs; in the former, it is in the mind. The one is a physical, the other a moral disorder. Erotomania is the result of an excited imagination, unrestrained by the powers of the understanding; satyriasis and nymphomania proceed from the local irritation of the sexual organs, reacting upon the brain, and exciting the passions beyond the restraints of reason. In the former, there is neither indecency nor the want of chastity; in the latter, there is unrestrained expression of sexual desire and excitement. The one is commonly caused by ungratified or disappointed affection excited in a virtuous mind; the other, by inordinate irritation or indulgence of the sexual passion.

"In erotomania, the eyes are bright, the manner and expressions tender and passionate, and the

actions free, without passing the limits of decency. Self and selfish interests are all forgotten in the devotion paid, often in secret, to the object of the mind's adoration. A state of ecstasy often occurs in the contemplation of the perfections which the imagination attaches to the subject of its admiration. The bodily functions languish during this state of moral disorder; the countenance becomes pale and depressed; the features shrunk; the body emaciated; the temper unquiet and irritable; and the mind agitated and despairing. The ideas continually revert to the loved and desired object; and opposition or endeavors to turn them in a different direction only render them more concentrated and determined in their devotion. At last, parents and fortune are abandoned, social ties broken asunder, and the most painful difficulties are encountered in order to obtain the object of admiration.

"In some cases, the attempts made by the patient to conceal and overcome this affection occasion a state of irritative fever, with sadness, depression, loss of appetite, emaciation, &c., which has not inappropriately been termed by LORRY, *erotic fever*, and which, after continuing an indeterminate period, may even terminate fatally. When a young person becomes sad, absent in mind, pale and emaciated, sighs frequently, sheds tears without any obvious reason, is incapable of mental or bodily exertion, scarcely speaks to any one, loses appetite, &c., it is sufficiently evident that the mind is inordinately possessed by some desired object. If a strong effort be not made to dispossess it of the predominant sentiment, or if the object of desire be not obtained, the symptoms become still more distressing. The corporeal functions languish, the eyes sink, the pulse becomes weak and irregular,

and the nights disturbed and sleepless. At last, a form of slow hectic is produced ; and the weaker organs, especially the lungs and heart, are the seat of slowly-produced disease ; the whole frame is blighted, and the patient sinks from the injurious influence of the mental affection on the vital organs.

"This form of moral disorder may increase, and affect the intellect in a much more serious manner, until general insanity or mania is developed ; and, with the progress of time, it may at last terminate in dementia or incoherent insanity. In each of these, the primary character of the disorder, or the original moral affection, will still continue to be manifested by the frequent suggestion of the same train of ideas, or recurrence to the object of devotion."

A cure of this disorder is not always easily accomplished. It not unfrequently happens that the affections are involved, and hence marriage is generally recommended. Where no physical derangement exists to forbid it, matrimony is often indicated and calculated to produce good results, but an indiscriminate resort to it often only enhances the misery of the patient. Medicines are seldom of any use. The cure will generally depend upon judicious management of the case, and this requires much judgment and skill and frequently of a kind which is not generally possessed. No rules of management can be given—everything must be determined by the condition and temperament of the patient and the circumstances connected with the case. The exercise of sound judgment and discrimination alone can be of any use, and where this is lacking the prospect of a cure will in all probability be limited, unless nature voluntarily

reasserts her control over the mind of the individual. It has been said that philosophy, instead of medical skill, must be exercised, as being the only means likely to prove successful in the treatment of erotomania, and certainly the tact which can "minister to a mind diseased" will prove the most effectual in accomplishing a cure. It is unfortunately true, however, that the real nature of the disease is too often mistaken at those stages when ordinary judgment might probably be successful in applying a remedy, and so the mischief progresses until some deplorable consequence supervenes, or until the utmost skill fails to prove of much avail.

THE AFTER AX.

MISCARRIAGE, OR ABORTION.

THIS has been defined as a separation and expulsion from the womb of the fœtus before its time, or before it has attained maturity. The expulsion of the ovum within six weeks after conception, has been called *miscarriage* ; between that time and the sixth month after pregnancy, *abortion* ; and between the latter time and the full period of nine months, *premature labor*. These distinctions are, however, regarded as simply arbitrary, and the words miscarriage and abortion are used indiscriminately. Abortions are a source of innumerable afflictions to females, and it would be difficult to correctly estimate the unborn thousands who yearly come to premature deaths in this way. It is given

the result of experience and observation that women more frequently miscarry at their first and last confinements than any other, the last half of the child bearing period being more subject to abortions than the first. Thirty-seven women out of every hundred, on an average, miscarry before they attain the age of thirty; and ninety out of a hundred, who live in matrimony to the close of the child-bearing period, miscarry once or more during that period. Miscarriages are most likely to occur during the first three months of pregnancy, and at about the sixth month." So frequent is the occurrence of this accident that its causes, consequences, and the means of preventing it, have become subjects of much concern. Numerous causes have been given as tending to produce it, and in a general way it may be said that it results from anything that excites the womb, or causes uterine contractions to take place. In the early days of marriage it is frequently produced by dancing, riding, and other sports and pleasurable exercises which are then apt to be indulged in and which serve to unduly agitate the embryo. It may also be produced by blows or falls; severe labor, great exertion, or fatigue; tight lacing, or pressure of the body; sudden shocks, frights, fits of passion, or other violent emotions whether of a painful or pleasurable nature; a diet too sparing or too nutritious; the abuse of spirituous liquors; other diseases, particularly fevers and hemorrhages; excessive bleeding, profuse diarrhœa, or obstinate constipation; immoderate venery; and it has even been attributed to an irritable disposition, to excessive indolence, lying in soft beds, etc. Occasionally there is a deficiency in the ovum which causes it to die and be expelled, and sometimes weeks, and even

months, have been known to elapse, after the ovum had lost its vitality, before its expulsion took place, cases being even given where the expulsion did not take place until the full period of parturition had expired. Then, again, some undiscoverable defect sometimes exists in the womb itself, so that at a certain stage of pregnancy abortion will regularly occur in spite of every effort to prevent it.

Owing to special circumstances, abortion sometimes takes place with unexpected suddenness, but usually when it is about to happen it can be foretold by certain premonitory symptoms, such as stinging pains in the lower part of the abdomen, coming and going, and extending across the loins and hips; a tired or weak feeling in the legs; pain in the forehead; sensations of heat and burning in the eyes; subsidence of the breasts, which, from having been distended, become soft and flabby; hot and cold flashes, or thirst, fever, and shiverings. Shortly after, or within a day or two, more certain signs appear: a discharge from the womb takes place of coagulable blood, or of yellowish matter tinged with blood, accompanied by sensations of weight in the pelvis and intermitting pains. This condition may continue for a shorter or longer period, and then become more severe, when the water is discharged and the contents of the womb expelled. The preceding symptoms may vary greatly in different cases, depending much upon the causes by which the abortion is produced and upon the condition of the patient.

There is always more or less danger attending an abortion. This danger, however, is largely dependent upon the causes by which it is produced and the attention which it immediately receives. It is especially apt to be dangerous when occasioned by

sudden violence, as by a fall, blow, kick, or other injury producing internal contusion or rupture of blood vessels, and leading to profuse floodings. When resulting from fright, mental agitation, or causes more free from sudden violence, it is generally less dangerous, though in any case the loss of blood may be dangerously profuse, while in all cases it is preceded or attended by more or less flooding. Even when produced, in the latter stages of pregnancy, by surgical skill, as is sometimes rendered necessary, it is regarded as a serious operation. Sometimes, however, recovery after abortion is speedy, while at others a long time is required. Many cases are known where a full recovery from its effects never occurred. Frequently, in consequence of neglect on the part of patients, it leads to affections of the womb giving trouble for years, or proving wholly incurable, as has been shown in the preceding sections on diseases.

When a woman is threatened with abortion she should immediately retire to bed, her mind made up to remain in a recumbent position until the process be either completely checked or terminated by delivery. The room should be kept cool, little or no fire being desirable, and well aired, and the bed-covering should not be excessive. There should be no sweltering between the bed-clothes, smothering between feathers, nor pressure upon the body of any kind. Everything heating or stimulating in food or drink should be avoided. The liquids used should be cold, all hot slops should be discarded, and the food should be such as is easy of digestion. A resort to numerous other measures may also become necessary, but these are so greatly dependent upon the circumstances attending each case, upon the habit and state of the patient, and are of such

a character that they are available only under the direction of proper medical or surgical skill, a resort to which should always be speedily had. By timely attention, threatened abortion can generally be prevented, and considerable success has even attended preventive measures after the process had already begun, or after flooding had lasted for some time.

When abortion has occurred once, it is very apt to take place again at the same period in a subsequent pregnancy, and when it has occurred several times its recurrence at the same period in each subsequent pregnancy can be avoided only by the greatest care and attention. It therefore becomes necessary that the woman who has once met with such an accident should make use of every precaution to prevent the recurrence of a similar event. Whatever the condition may be disposing to abortion, proper efforts should at once be made to remove it. It is especially necessary that the womb and its vessels should acquire a healthful tone before another conception takes place, for which purpose sea-bathing or the shower bath will be found highly useful. Such attentions as are calculated to promote the health of the system should also be carefully observed. Women of a plethoric habit are recommended to make use of mild aperient medicines to keep the body open, or, what is far preferable, of a diet which will have such an effect and which is also designed to diminish the fullness of habit. The time generally spent in sleep by persons of a plethoric habit should be lessened, and in all cases the feather bed and over-warm bed-clothes should be avoided. Regular exercise or labor, not carried to a point resulting in fatigue, should be daily taken, and all influences calculated

age for marriage is from twenty-five to thirty. "Give a boy a wife and a child," says an old proverb, "and death will soon knock at his door." The exactions or indiscretions common to the married state are prone to exceed the capabilities of the ungrown and undeveloped body, and so, sooner or later, and generally speedily, the constitution is broken down and the health destroyed. The mere fact that a youth has apparently reached his full size at the age of sixteen or eighteen is no evidence that his organism is consolidated and perfected.

In the female, full maturity and perfect development are regarded as being secured from the ages of twenty to twenty-five, and hence this period is considered as the proper age for the consummation of marriage. Prior to the age of twenty years, her physical powers are generally inadequate to the production of healthy children. The period from twenty to twenty-five is also found to be the most prolific in the production of offspring, while the giving of birth to children is likewise attended by less danger, it being an ascertained fact that the percentage of child-bed mortality is least at the age of twenty-five, and increased prior and subsequent to that age. Observation has amply shown that females who marry at a much younger age than twenty and begin to bear children, soon find their constitutions broken down, becoming sickly and diseased, and frequently so unfitted for family duties as to be rendered indifferent alike to themselves and their families, and a weary burthen to their husbands for the remainder of their short lives. "The idea," says Dr. PLATT, "that females are by nature more mature at a given age than the other sex is simply a popular error, for which not a valid argument can be adduced; for it is only because man has hurried

her into matrimony at an improper and immature age, that she now develops earlier than he does. The false passion of man for a young and immature wife which has been tolerated by women, through matrimonial competition, until it has now grown into a custom, and almost into a law, has proved frightfully destructive to women, and is now annually rushing millions of them into an untimely grave. And yet, the innocent girl, schooled to this idea and fate, and taught the fatal error that early marriage, no matter how early, is highly creditable to her, and a great victory over the older unmarried females of her acquaintance, makes the direful leap of matrimony, from which, in nineteen cases out of twenty, she never regains an equally desirable condition as the one she left."

From the fact, however, that the human organization is incapable of imparting full life-powers to offspring until it is fully matured and developed, results the most serious effect of immature marriages; for the children of such marriages are in almost every case feeble and delicate, and if, perchance, they attain maturity, the weak and infirm constitutions which they inherited unfits them for the purposes of life, inflicts all manner of sufferings upon them, and then sends them immaturely to their graves. Observation has revealed the very significant fact, that, in those cases where, by prudence or accident, the parents escape the evil consequences of immature marriages, the children who are the first products of such unions, provided they possess sufficient vitality to attain to maturity, are inferior, both physically and mentally, to those born later or after the forms and physical powers of the parents had become more matured and consolidated. From the foregoing facts it is concluded that prior

to the age of twenty-five in the male, and twenty in the female, the chances are greatly against their capacity to become fathers and mothers of healthy children—children who shall be reared with moderate trouble, who shall attain to maturity, be fitted for the world, and finally reach old age.

It has, however, been alleged, in justification of the practice of early marriage, that the average of human life is too short to permit of the postponement of wedlock much beyond the actual time of the commencement of puberty. In this allegation, as in many others, the very evil which is given as a reason for the practice, is, to a large extent, the result of the practice itself. If such early marriages were never contracted, the average of human life would probably be much prolonged. "If people were as robust as they might be," says a physiological writer, "and lived in harmony with their natural organizations, the probabilities are that with the commencement of puberty the desires which then arise might be consummated without the incurrance of physical injury; but, as it is, there is a day of serious reckoning for early indulgence; for precocious persons—unless their constitutions are as powerful as their desires—who give way to their passions at their first exactions, barter their youth for their enjoyment, and are old and weary of the world at an age when people of more moderate habits are only in the meridian of pleasure and existence."

What has been said of early marriages may be said with almost equal accuracy of late ones. Children born of old fathers are generally found to be much deficient in healthy constitutions, entering the world inheritors of the infirmities of their sires and marked for early deaths. Late nuptials, too, are found to be as destructive to the husbands as early

ones, and accounts are even given of aged bridegrooms having died on their very nuptial nights.

CHOOSING A PARTNER.

In the choice of a partner for life, there are many physiological requirements in regard to which, under the social regulations at present governing society, but very little can be definitely ascertained, while yet the greatest deception may be practised concerning them; but there are also many more which can and should be justly weighed. Of the former are all sexual and hidden defects of person, and by the discovery of just such defects the dreams of happiness, so fondly indulged in by many a man and woman prior to wedlock, have been sadly and often disgustingly destroyed after marriage. This fact has frequently attracted the attention of physiologists, one of whom expresses himself as follows, which may be regarded as a not uncommon opinion entertained by them: "It is a great error in society, that which compels people to marry, while so much in the dark on certain subjects in which they are so vitally concerned. For instance, it is not to be expected that much happiness can attend a union when a wedded couple discover that their physical conformations are unsuited to each other: and that hence they cannot duly realize the enjoyments of wedlock. It might be well for millions, if the manners of the age permitted inquiry on those subjects; and it might be accomplished through relations or friends, without any great sacrifice of modesty. At all events, the mode of taking each other for better or worse, blindfolded, is, in nine cases out of ten, the cause of unhappy marriages, divorces, elopements, desertions, and so forth; for if a couple are physically and mentally

agreed, contentment is the natural result ; otherwise, matrimony is not to them the thing they expected, and hoped for, and each pines for enjoyments which they find it impossible to convey to the other. I would almost prefer the old Scotch fashion of 'handfasting'* to that of taking things on chance, without any future *honorable* alternative." Still it would be extremely difficult to establish any system not liable to some objections, and as more or less risk is inseparable from all human engagements, perhaps it is but proper that marriage should be no exception—at all events, in the choice of a partner, a certain amount of risk must always be run in spite of all physiological instruction. Therefore, marriage has, not altogether inaptly, been called a lottery ; but, if it be so, as little chance of drawing a blank should be run as is possible under the circumstances, by using proper judgment to ascertain such particulars as are ascertainable.

In the choice of a partner the first consideration should be health. A woman may be ignorant, lazy, slatternly, or have one or several of a hundred grievous faults of a similar character—or a man may be addicted to one or more of the numerous bad habits of a like nature which are common to *males*—still, there is a possibility, and even a probability, that such errors may be reformed or cor-

* "Knowest thou not that rite, holy man? Then I will tell thee—we Border-men are more wary than your inland clowns of Fife and Lothian—no jump in the dark for us—no clinching the fetters around our wrists till we know how they will wear with us—we take our wives, like our horses, upon trial. When we are handfasted, as we term it, we are man and wife for a year and day—that space gone by, each may choose another mate, or, at their pleasure, may call the priest to marry them for life—and this we call handfasting."—*Scott's Monastery*.

rected by judicious management ; but when the constitution is shattered, the health destroyed, or ~~disease~~ implanted in the system, there is but a meagre possibility of a remedy being secured. Of all the evils that can befall a man, one of the worst is a feeble, complaining, and perpetually ailing wife, who may yet have the power to give birth to children while she has none to assume the responsibilities of a family ; and, surely, a sickly, invalided, and debilitated husband is even a still greater affliction to a woman.

A matter equally important as that of health, and to which special regard should be had, is temperament. Observation has shown that in selecting partners the temperaments must be regarded as true guides. The union of opposite temperaments is not only best calculated to insure domestic happiness, but it is also absolutely essential to secure healthy offspring and the preservation and advancement of the race. This influence of temperaments has been aptly illustrated by the investigations made to ascertain the effects of consanguineous marriages. It was for a long time supposed that inter-marriage of cousins and other relations tended to sterility, and to both physical and mental deterioration of offspring, but statistics have not only illustrated the fact that consanguinity has nothing to do with the production of such effects, but they have also shown that where consanguinity existed, and where the marriages were of healthy persons of opposite temperaments, the per centage of births was greater, and the per centage of deaths, within a given age, was less, than under similar circumstances where such consanguinity did not exist. A similar difference was also found in favor of consanguinity in reference to the per centage of insanity and deaths

from consumption. The true cause of the evil effects erroneously attributed to consanguinity, was found to consist simply in the union of similar temperaments, and the same cause is also found to produce the same effects, whenever it exists, independent of any relationship between the persons.

Nature, however, has largely, and happily for mankind, implanted in the human being an instinctive principle by which, when influenced solely by natural preferences, the union of opposite temperaments is spontaneously effected, so that the sanguine seldom select the sanguine, the lymphatic the lymphatic, etc. As a rule, the opposites are inclined to meet in matrimony—the short preferring the taller, the corpulent the leaner, the dark the fairer, the timid the more courageous, and so on through the whole catalogue of opposites. This principle of nature, governing individual likes and dislikes, almost imperceptibly guides and controls the human race, and so prevents the evil consequences that would follow from a union of parallel dispositions and appearances. Similarities are almost certain to give rise to unhappiness in the married pair: where both husband and wife are of a fiery temper, a blaze that will drive them away from each other as the only means of cooling their heated blood is sure to occur; and when they are both of a melancholy disposition, the very monotony of their lives will force them into other associations. The same is true in reference to physical construction and appearance: where similarity prevails, neither will recognize in the other the ideal of beauty existing in the mind of each, and so one or both will probably, sooner or later, discover and be attracted by greater imagined perfections elsewhere.

The most important result, however, of the union

of opposites is realized in the offspring. It is a rule of nature that children shall inherit the qualities of their parents, or be like them to a greater or less extent. "Like produces like," "like parents, like children," "he takes after his father," and many other old sayings of a like character are common to all, so that it has been given as a physiological fact that "large parents will produce large children; small parents, small children; gifted parents, gifted children; stupid parents, stupid children; diseased parents, diseased children, etc.; and not only do the offspring take on the form, size, features, complexion, gait, color of eyes, hair, etc., of one or both parents, but also their peculiarities of appetite, passions, propensities, and dislikes, and even their mode of manifesting these qualities." Although there may be exceptions to this rule of nature, they are too limited to prevent what would necessarily follow from the constant union of similarities—the production of extremes which would wholly upset the wholesome equilibrium intended by nature. Extremes are always imperfections, and their perpetuation would simply be the perpetuation of disease and the final extirpation of the race.

In brief, then, the following may be given as the conclusion of physiology in reference to the choice of a partner: That couple are well-matched, both for matrimonial happiness and for the production of healthy and long-lived progeny, who are healthy themselves, and between whom there is a proper dissimilarity in temperament, mental conformation, and bodily construction.

Numerous researches have been made to determine specifically the effect of individual dissimilarities, especially of the temperaments, upon offspring, and

the following rules have been given as in the main accurate:

"1st. Where both parties are constitutionally the same, there will probably be no children.

2d. The vital elements are incompatible with each other, and if children are born to parents who are alike in this respect, they will probably be idiotic, or affected with softening or distortion of the bones.

"3d. When parties who marry are nearly alike—if their temperaments differ only in part—they will have children who may live to adult age, but who will then probably die of consumption. This accounts for the fact that whole families are sometimes taken off by consumption between the ages of twenty-two and twenty-seven, where this disease had not previously existed in the families of the parents or their progenitors.

"4th. If the constitutions of a married couple assimilate to the extent of one-half, their children will be apt to die before the first seven years. The diseases of such children are tubercles in the glands of the intestines, or in the membranes of the brain.

"5th. When persons marry who are alike in temperament, and whose constitutions materially differ, a majority of their children will be still-born, and none will probably live to be two years old.

"6th. When one of the parties to a marriage is exclusively vital, and the other similar, but of a nervous and melancholy turn, the children will generally be promising.

"7th. To produce smart and healthy children, one of the parties should be of sanguine-bilious temperament, with good vitality, and the other of a quiet, lymphatic turn."

In this connection, several additional extracts

from the writings of physiologists may here be appropriately given as defining the physical perfections of the sexes: "A well formed woman should have her head, shoulders and chest small and compact; arms and limbs relatively short; her haunches apart; her hips elevated; her abdomen large, and her thighs voluminous. Hence, she should taper from the centre up and down. Whereas, in a well formed man the shoulders are more prominent than the hips. Great hollowness of the back, the pressing of the thighs against each other in walking, and the elevation of one hip above the other, are indications of the malformations of the pelvis.

"The length of the neck should be proportionably less in the male than in the female, because the dependence of the mental system on the vital one is naturally connected with the shorter courses of the vessels of the neck.

"The neck should form a gradual transition between the body and head—its fullness concealing all prominences of the throat.

"The shoulders should slope from the lower part of the neck, because the reverse shows that the upper part of the chest owes its width to the bones and muscles of the shoulders.

"The upper part of the chest should be relatively short and wide, independent of the size of the shoulders, for this shows that the vital organs which it contains are sufficiently developed.

"The waist should taper little farther than the middle of the trunk, and be marked especially in the back and loins, by the approximation of the hips.

"The waist should be narrower than the upper part of the trunk and its muscles, because the reverse indicates the expansion of the stomach, liver,

and great intestines, resulting from their excessive use.

"The back of woman should be more hollow than that of man; for otherwise the pelvis is not of sufficient depth for parturition.

"Woman should have loins more extended than man, at the expense of the superior and inferior parts, for this conformation is essential to gestation.

"The abdomen should be larger in woman than in man, for the same reason.

"Over all these parts the cellular tissue and the plumpness connected with it, should obliterate all distinct projection of muscles.

"The surface of the whole female form should be characterized by its softness, elasticity, smoothness, delicacy, and polish, and by the gradual and easy transition between the parts.

"Plumpness is essential to beauty, but an excess of plumpness is to be guarded against. Young women who are very fat are cold, and prone to barrenness.

"In no case should plumpness be so predominant as to destroy the distinctness of parts."

PROPER TIME TO MARRY.

The marriage time is very properly left to be fixed by the female, and needs but little attention, yet, even the little which it does need, is sometimes disregarded. The proper time is about midway between two ordinary menstrual periods, because then the nervous system is best prepared to endure the agitation to which the event gives rise. There is always more or less irritation and excitement attending each menstrual period, and the ceremony of marriage, performed just prior to the recurrence

CHAPTER XXII.

MISCELLANEOUS FACTS AND INFORMATION.

THE miscellaneous facts and information in the following pages are collected from the writings of different authors. Much of this information is the result of the research, observation, and experience of generations, and to those who have the capacity of profiting by the experience of the past it will be found both practicable and useful.

FOOD AND DIET.

Frequent reference having been made in preceding pages to the effects of food and diet, the following extracts are given concerning that subject:

"Modern science has paid much attention to the investigation and classification of food, with the view of the better enabling us to supply, by a judicious selection from the numerous articles which nature has provided, those elements which compose the human body, and which are constantly demanded by it because constantly consumed. All natural food contains:

"*First*—That which makes and supplies muscle, in which the principal element is nitrogen: therefore called nitrogenous food.

"*Second*—That which produces fat and supplies heat, in which the principal element is carbon: therefore called carbonaceous food.

"*Third*—That which supplies bones, brain, and nerves, in which the principal element is phosphorus: therefore called phosphatic food.

"*Fourth*—Substances which are ejected without being appropriated to supply the elements of the body, and which have therefore been classified as waste.

"Repeated investigations have shown in what proportions the several properties of food are contained in the

various articles now principally used. This information is collected, to an extent practically large enough, in the following table, which shows the proportion of each class of food contained in the articles enumerated, and the judicious use of which will enable any one to supply all the elements demanded by the system:

PROPORTIONATE PROPERTIES OF FOOD.

Articles,* 100 parts of each.	Water, etc.	Muscle Mak- ing Food.	Heat and Fat producing Food.	Food for Brains, Nerves, etc.
Apples.....	84.0	5.0	10.0	1.0
Barley.....	14.0	15.0	68.8	4.2
Beans.....	14.8	24.0	57.7	3.5
Beef.....	50.0	15.0	30.0	5.0
Buckwheat....	14.2	8.6	75.4	1.8
Butter.....			all.	
Cabbage†.....	90.0	4.0	5.0	1.0
Carrots.....	91.8	0.6	6.6	1.0
Cauliflower....	89.0	6.4	3.6	1.0
Cheese‡.....	10.0	66.0	19.0	6.0

* "This table refers to articles in their natural condition. For example, by wheat is meant the natural grain, and not the bolted white flour almost generally used and which is deprived of all the food for brain and of nearly all for muscle. Some portion of the properties of food is necessarily lost in cooking. Very wholesome articles are frequently rendered quite the reverse before they leave the hands of the cook. Experience and science alike concur in recommending the processes of cooking in the following order: broiling is regarded as the best roasting, second; baking, third; boiling and stewing, fourth. Frying is generally condemned.

† "Vegetables generally are principally composed of water and waste, and are highly useful when eaten in connection with other food rich in the elements demanded by the system. The same is true of berries and fruits generally. These latter, however, also contain acids which are indispensable for the health of the system.

‡ The article of cheese, more than any other in use among us, contains the nitrogenous and phosphatic principles, but its phosphates being regarded as insoluble, it is not a food for nerves and brains, although well adapted for supplying muscle and bone.

Articles. 100 parts of each.	Water, etc.	Muscle Mak- ing Food.	Heat and Fat producing Food.	Food for Brains, Nerves, etc.
Chicken.....	46.0	18.0	32.0	4.0
Clam.....	85.0	12.0	0.5	2.5
Codfish*.....	79.0	14.0	little	5 to 6
Corn†.....	14.0	12.0	73.0	1.0
Cucumbers....	97.0	1.5	1.0	0.5
Eels.....	76.0	17.0	3.5	3.5
Eggs, white of.	53.0	17.0	none	5.0
Eggs, yolk of..	79.0	5.0	27.0	4.0
Fat.....			all	
Flounder.....	78.0	15.0	little	3 to 4
Haddock.....	80.0	13.0	do.	5 to 6
Halibut.....	74.0	18.0	do.	3 to 4
Herring.....	75.0	18.0	do.	4 to 5
Lamb.....	50.5	11.0	35.0	3.5
Lentils.....	14.0	26.0	58.5	1.5
Lobster.....	79.0	14.0	little	5.0
Milk, cow's...	86.0	5.0	8.0	1.0
Mutton.....	44.0	12.5	40.0	3.5
Oats.....	13.6	17.0	66.4	3.0
Oysters.....	87.0	10.0	little	2.5
Parsnips.....	90.0	2.0	7.0	1.0
Peas.....	14.0	23.4	60.0	2.5
Plaice.....	78.0	14.0	little	5 to 6
Pork.....	38.5	10.0	50.0	1.5
Potatoes.....	75.2	1.4	22.5	0.9
do., sweet..	68.6	1.5	27.0	2.9
Rice.....	13.5	6.5	79.5	0.5
Rye.....	13.0	13.8	71.5	1.7
Salmon.....	72.0	20.0	little	6 to 7

* "Fish, generally, have but a small amount of food producing heat and fat, and are rich in the other properties. The references here are to fresh fish. When stale their natural properties are affected, and when partially decomposed they are dangerously poisonous.

† "This refers to Northern corn. Southern corn contains water, 14; food for muscle, 36; heat and fat producing food, 46; and food for brain, nerves, etc., 4; while that known as Tuscarora corn contains 14 of the first, 5 of the second, 80 of the third, and 1 of the fourth.

Articles. 100 parts of each.	Water, etc.	Muscle Mak- ing Food,	Heat and Fat producing Food.	Food for Brains, Nerves, etc
Smelt.....	75.0	17.0	little	5 to 6
Sole.....	78.0	15.0	do.	5 to 6
Starch.....			all	
Sugar.....			all	
Trout.....	75.0	17.0	little	5 to 6
Turbot.....	79.0	14.0	do.	5 to 6
Turnips.....	94.4	1.1	4.0	0.5
Veal.....	68.5	10.1	16.5	4.5
Wheat.....	14.0	14.6	69.4	2.0
Whiting.....	78.0	15.0	little	5 to 6

"From this table it will be seen that to ascertain the amount of actual nutriment contained in each article the parts mentioned in the three right hand columns will have to be added together; thus, in the article of apples, 5, 10, and 1 being added, show 16 parts of nutriment in each 100 parts. The first column designates the waste. By the judicious selection of food containing the requisite amount of waste, the bowels can generally be completely regulated and costiveness and constipation avoided or remedied.

"The following table furnishes an approximate statement of the time* required to digest the various articles named, the hours and minutes indicating the period which each separate article requires from the time it enters the stomach until it is prepared to pass into the blood:

TIME REQUIRED TO DIGEST FOOD.

Articles.	Hours.	Minutes.
Apples—hard and sour, raw.....	2	50
Apples—mellow and sour, raw.....	2	
Barley—boiled.....	2	
Beans—boiled.....	2	30

* The time required for the digestion of a specific article of food must necessarily vary in different persons, but the table will be found valuable as indicating the relative digestibility of the articles named, and as enabling the selection of such articles as are easy or hard of digestion.

Articles.	Hours.	Minutes.
Beef—fresh and lean, roasted.....	3	
Beef—dry, roasted.....	3	
Beef—steak, broiled.....	3	30
Beef—with salt only, boiled.....	2	45
Beef—with mustard, etc., boiled....	3	30
Beef—old, hard, salted, broiled....	4	15
Beef—fresh and lean, fried.....	4	
Beef—boiled.....	3	45
Bread—wheat, fresh, baked.....	3	30
Bread—corn, baked.....	3	15
Butter—melted.....	3	30
Cabbage—boiled.....	4	30
Cake—corn, baked.....	3	
Cake—sponge, baked.....	2	30
Carrots—boiled.....	3	15
Cheese—old, strong, raw.....	3	30
Chicken—full grown, fricassee....	2	45
Codfish—cured, dry, boiled.....	2	
Custard—baked.....	2	45
Duck—domestic, roasted.....	4	
Duck—wild, roasted.....	4	30
Dumpling—apple, boiled.....	3	
Eggs—fresh, hard boiled.....	3	30
Eggs—fresh, soft boiled.....	3	
Flounder—fresh, fried.....	1	30
Gelatine—boiled.....	2	30
Goose—roasted.....	2	30
Heart—animal, fried.....	4	
Lamb—fresh, boiled.....	2	30
Liver—beef's, fresh, boiled.....	2	
Milk—raw.....	2	15
Milk—boiled.....	2	
Mutton—fresh, roasted.....	3	15
Mutton—fresh, boiled or broiled...	3	
Oysters—fresh, raw.....	2	55
Oysters—fresh, stewed.....	3	30
Parsnips—boiled.....	2	30
Pig—sucking, roasted.....	2	30
Pig's feet—soused, boiled.....	1	
Pork—fat and lean, roasted.....	5	15
Pork—recently salted, boiled.....	4	30
Pork—recently salted, fried.....	4	15

Articles.	Hours.	Minutes.
Pork—recently salted, broiled.....	3	15
Pork—recently salted, raw.....	3	
Pork—recently salted, stewed.....	3	
Potatoes—boiled.....	3	30
Potatoes—roasted, or baked.....	2	30
Rice—boiled.....	1	
Sago—boiled.....	1	45
Salmon—salted, boiled.....	4	
Sausage—fresh, broiled.....	3	20
Suet—beef, fresh, boiled.....	5	30
Suet—mutton, fresh, boiled.....	4	40
Soup—beef, vegetable and bread, boiled.....	4	
Tapioca—boiled.....	2	
Tripe—soused, boiled.....	1	
Trout—salmon, fresh, boiled.....	3	30
Turkey—roasted.....	2	30
Turkey—boiled.....	2	25
Turnips—boiled.....	3	30
Veal—fresh, broiled.....	3	
Veal—fresh, fried.....	4	
Vension—steak, broiled.....	1	35

"It is estimated—and the estimate is based upon many practical observations and experiments—that, in the ordinary conditions of health, the proportions in which the system requires the several classes of food is about as follows: fifteen per cent. of nitrogenous food, for muscle; sixty to seventy per cent. of carbonaceous food, for heat; and two to three per cent. of phosphatic food, for brain, bones, and nerves. Climate and occupation necessarily vary the proportions of muscle-making and heat producing food required, more of the latter being demanded in cold climates or cold weather than in warm, and by hard laboring persons than by those of sedentary habits. For all practical purposes, however, experience has shown that with ordinary labor, such, for example, as is required of the soldier on duty, five ounces of nitrogenous and twenty ounces of carbonaceous food meet the daily demands of the system, while in sedentary and less active occupations the amount of each may be proportionately diminished. Everything in excess of these demands, except that which

is waste, is not only regarded as useless, but as positively injurious."

Food having the effect of exciting the sexual passions is called *aphrodisiac*—when having the reverse effect, *an-aphrodisiac*. That certain food possesses aphrodisiac properties is an established fact, and it has even been said by some physiologists that, in conditions of perfect health of the sexual organs, chastity and lechery simply depend upon diet and are under the absolute control of the individual. It would be difficult to define distinctly all the articles of food credited with aphrodisiac properties, but, in a general way, it may be said that those which largely contain the phosphatic element and furnish food for nerves and brains, are especially regarded as possessing such properties. Efforts have been made to introduce this element into certain articles of consumption, especially into white bread,* by the addition of preparations of phosphorus; but as phosphorus, even in very small portions, is a deadly poison in any state except as naturally existing in food, all attempts to introduce it artificially into any article of consumption, must be liable to serious objections.

A careful study and application of the preceding tables and remarks will be found sufficient to enable any one to select such articles of food as may be demanded, either in health or disease, in reference alike to nutriment and digestibility. Individual tastes and antipathies must, of course, be respected, and in no case should anything be eaten which is known to disagree with the individual, however wholesome it may otherwise be. The taste, ap-

* Wheat, in its natural state, more nearly than any other article, contains the amount of all the elements required by the system; but as the food for muscle, nerves, and brains is contained in that part of the grain which is separated by the process of bolting, very little beyond the heat-producing principle remains in the white flour so generally used for making bread. To such an extent is this the fact that it requires fifteen barrels of white flour to furnish the same amount of food for muscle, nerves, and brains as is contained in a single barrel of flour not deprived of any of the elements of the grain—a sad exhibit of the power of custom in perverting natural food and perpetuating human stupidity.

petite, and feelings regularly call for the elements demanded by the system, and with the information here furnished ordinary reason and judgment can so guide them in determining the kind and quantity of food required that there should be no danger of going astray.

THE HUMAN TEMPERAMENTS.

By these are meant certain types, forms or conformations of the human body, each known and distinguished from the other by certain characteristics, which enable those who are familiar with these peculiarities to readily distinguish one temperament from the other. The existence of the temperaments is believed to depend upon the development of certain parts or systems in the body, and each is accompanied by different degrees of activity of the brain, and corresponding difference in the talents and manifestations of the individual. They are four in number, viz.: nervous, sanguine, bilious, and lymphatic. When the brain and nerves are predominant, it is termed the *nervous* temperament; if the lungs and bloodvessels constitutionally predominate, the *sanguine*; if the muscular and fibrous systems are in the ascendancy, the *bilious*; and when the glands and assimilating organs are in the ascendancy, it is termed the *lymphatic* or *phlegmatic*.

1. The nervous is indicated by fine, thin hair, small muscles, thin skin, pale countenance, brilliant eyes, with great quickness and sensitiveness to impressions, and is really the mental or intellectual temperament.

2. The sanguine is known by a stout, well-defined form, a full face, florid complexion, moderate plumpness, firm flesh, chestnut or sandy hair, and blue eyes. This is the tough, hardy, working temperament, excessively fond of exercise and activity, and a great aversion to muscular quiescence and inactivity, and consequently averse to books and close literary pursuits.

3. The bilious is indicated by a thin, spare face, dark skin, black hair, firm flesh, moderate stoutness, with rough, harsh, and strongly marked features. This temperament gives great will, elasticity, and powers of endurance, and, when combined with the nervous, is the great, efficient, moving temperament in the great events of the world.

4. The lymphatic is indicated by paleness, roundness of the form, softness of muscle, fair hair, sleepy, half-closed eyes, and a dull, sluggish, inexpressive face. In this temperament the brain and all the other parts of the body appear to be slow, dull, and languid, and the whole body little else than one great manufactory of fat. These temperaments, however, are rarely found pure, but mixed or blended in an almost endless variety of ways, producing the ever-varying peculiarities of human character and intellect.—Dr. A. H. PLATT'S "*Human Life Prolonged*."

PRODUCING THE SEXES AT WILL.

This has been the subject of much fruitless study and investigation among physiologists, and different means have, in all ages, been credited with being more or less effectual in determining the sex of offspring; but, generally, if they possessed any virtue at all, they were attended by so many failures that they became practically worthless. More recent investigations, however, have established a degree of certainty which places the sex of children very much under the control of the parents. The manner in which the sex may be thus controlled is given as follows: "It has long been known that queen bees lay female eggs first and male last; and the same is known to be true of the *hen*, and is probably the case with all fowls. Mares, too, shown the male late in heat, have male colts, and *vice versa*. M. THURY, Professor in the Academy of Science, at Geneva, Switzerland, taking advantage of these known facts, has shown how the sexes, either in man or brute, may be produced at pleasure; and his plan has been so extensively tested in Europe, especially in the growing of stock, as no longer to admit of the least doubt as to its correctness. His experiments have established the following cause for the production of the sexes at will: In all viviparous females, both human and brute, there is a period of "heat," recurring more or less frequently, according to the nature of the creature; and if the female be exposed during the early part of this period, the product, if any, will be females; but if in the latter or last part of it, it will be males. In the brute, this period of heat, or time of fecundation is short, not

usually lasting more than three or four days; but in the human species it usually occupies nearly one-half of each *menstrual* month—that is, not only the actual period of purgation, but about ten days subsequent to the close of that event; and to produce the sexes at will, it is only necessary that the female should be exposed early or late, as the parties may desire the sex."

STERILITY.

Barrenness in the female arises from absence, malformation, or smallness of the vagina; uterine or vaginal tumors; displacement of the womb, from corset lacing or other silly practices; ovarian dropsy; occlusion of the Fallopian tubes; aversion to the husband; indifference to the sexual act; acrid vaginal discharges, which destroy the spermatozoa before they reach the ovum in the womb; want of adaptation in the temperaments of the parties; nervous or restrained orgasm; excessive indulgence, inducing debility in the parties, etc.

Woman is *naturally* sterile, or incapable of fecundation, before puberty, during most of the last half of her *menstrual* month, after the cessation of the *menstrual* flux from age, and also during pregnancy and lactation, and often *unnaturally* so between puberty and the final cessation of the catamenia, although there are occasionally exceptions to all but the last. Cases are on record of conception before menstruation. Some females will conceive *any time* between their monthly fluxes. Cases are known in which women have borne children many years after the complete cessation of the monthly flux from age. Conception during lactation is not uncommon; and it is said there are well authenticated cases of superfetation, or of conception while already pregnant. As to sterility proper—that is, between puberty and the natural cessation of the catamenia—very little is positively known of a practical or useful nature, although a few simple facts may aid those suffering from this misfortune. If a woman have no children during the first three years of her married life, there is but one chance in thirteen that she will ever have any. The age of a woman at the time of her marriage has much to do with her prolificacy; for those married between twenty and twenty-four not only

bear more children in the aggregate, but sooner begin to bear, than either those married earlier or latter in life. Marriages under twenty-one are usually more prolific than those over twenty-five; and from fifteen to twenty, one in every eight is sterile; while from twenty to twenty-four nearly all are fruitful; and after twenty-five the chances for offspring diminish with the age. A woman who has had children, and ceases for three years, will not be likely to bear any more, and the prospect diminishes with the lapse of time. After the first child, in cases where females continue to be fertile, births will occur, on an average, once in about twenty months. More children are born in warm than in cold climates; and, in the latter, more in spring and summer than in autumn and winter. The rich and fashionable are less fruitful than the hardy and industrious poor and middling classes. In cases of sterility, the female is nearly always supposed to be in fault; but this is not so; for many husbands, though vigorous and enjoying good health, are absolutely sterile."

—Dr. A. H. Platt.

BATHING AND WASHING.

Bathing and the local application of water having been frequently alluded to in preceding pages, a more particular reference to the subject may be required here. The temperature of the water governs the designation of the bath. When it is of a temperature not higher than 75 degrees, it is called a cold bath; when higher than 75 degrees but not exceeding 85 degrees, a temperate bath; when higher than 85 degrees but not exceeding 95 degrees, a tepid bath; when higher than 95 degrees but not exceeding 98 degrees, a warm bath; and when higher than 98 degrees but not exceeding 105 degrees, a hot bath. These are the ordinary baths, in most cases accessible to all, and available for domestic use, because they can be taken in any vessel or receptacle for water. The shower bath consists in throwing water over the body in streams, generally from above, so that it first strikes the head, and top of the shoulders and then runs over the body. To accomplish this conveniently requires certain mechanical arrangements, but in cases of emergency, or where such conveniences are not to be had, an ordinary sprinkling

can will be found very efficient, the water being sprinkled over the body from above very much in the manner of rain. The sponge bath has been thus described: "The most convenient mode of bodily ablution is by the aid of a good sized sponge and Turkish towel or hair gloves, and a piece of oil cloth or carpet to stand upon. The sponge can be squeezed so as to contain little but moisture, or filled with water and showered over the body. With it the whole body can be speedily wetted, and if rapidly dried with an ordinary towel, and then quickly rubbed with a Turkish towel or hair gloves, but little of an unpleasant nature will be experienced. Those who are unused to bodily bathings can soon become enured to them by adopting the following course: Take the moist sponge and with it sponge one-half of the body, keeping the other half covered; then immediately dry with an ordinary towel, and then rapidly apply the friction of the Turkish towel or hair gloves. In this manner one-half of the body can be bathed at a time and covered as soon as bathed. If done in a warm room, with water at a moderate temperature, the operation will not be unpleasant even in midwinter, and the subsequent sensations will be highly agreeable. In this way very delicate constitutions can be rendered hardy and capable of great endurance. If this course of bathing be followed every morning it will not be long before water will be more lavishly used and the work performed with zest and vigor. A cold room is generally preferred by the veteran bather, and we have known such to rise in the early morning, break through a scum of ice, seize the sponge, souse it into the water and then upon the person—performing the operation of sponging, drying, and rubbing in a few minutes; and then proceed to dress all aglow from the exertion and reaction, without having experienced any inconvenience beyond a paltry shiver or two. To such the sensation of cold, when they breast the storm of a winter's day, is but little felt, while such a thing as 'catching a cold' is known to them only because they hear the complaints of others." The ordinary vapor bath simply consists in passing the vapor or steam arising from heated water over the body in any manner that this may be done. The usual manner is by sitting over the rising vapor, which is confined by a blanket or other covering thrown around the person, or

by lying in bed, with no clothing underneath but well covered, while the vapor rises from heated water under the bed. Topical or local bathing consists in applying water, of any required temperature, to a special part, by any convenient means, such as immersing the part in water, introducing water upon it with the wetted sponge, sprinkling can, or otherwise. By the ordinary domestic salt, mustard, stimulant, or medicated baths, etc., are meant the use of water, of any temperature, which has been prepared by the addition of salt or other substance required. Such are some of the most common modes of domestic bathing which are available where bathing establishments, fitted up with all the necessary appliances, are not accessible. Under ordinary circumstances they are fully efficient, and, in fact, the daily morning sponge bath has been frequently pronounced the most beneficial of all modes of regular bathing.

In all bathing one particular precaution must be observed. *The bath must be followed by a reaction in all cases, or it will do harm instead of good.* The application of cold water to the body drives the blood from the surface, and the bath, to be beneficial, or not injurious, should be immediately followed by a reaction of the blood, spreading over the skin a moist heat and glow. This reaction, however, is always assured when the bath is taken properly and immediately followed by drying with the towel, and by friction or rubbing of the body with a crash or Turkish towel, or the hair gloves. The length of time a bath may be applied must necessarily depend upon circumstances and the condition of the bather. The time given for a cold bath varies from two to ten minutes, for a temperate bath from five to fifteen minutes, and for a tepid or warm bath from fifteen to thirty minutes, or at the pleasure of the bather.

All the foregoing observations are alike applicable to male and female. The latter, however, must also pay due attention to some additional precautions. With them, local ablutions are so peculiarly imperative that it is the testimony of experience, in which all authorities concur, that by the neglect of such ablutions innumerable female affections are constantly being occasioned. These local ablutions should be daily applied, and they may be judiciously aided by the female syringe—the use of the

syringe, however, being dispensed with several days prior to, and also during the continuance of the period of menstruation, and freely resorted to after the flow has fully ceased. Cold is known to be a most prolific source of female diseases, and it is especially apt to prove injurious if exposure occurs during the menstrual period, so that at that time no precaution against it can become excessive. In local bathing, therefore, during the menstrual period, it becomes especially necessary to exercise proper precaution against the possible effects of cold.

In the bathing of infants too much care cannot be bestowed upon the temperature of the water and of the room. The natural temperature of the body is ninety-eight degrees, and in regulating the bath for infants this temperature is regarded as none too high. If the water or the room be too cool, the bath will be very apt to prove injurious. Cold is a powerful agent in the destruction of infants, and could the number of those who are annually killed by improper exposure to it be accurately given a sad and fearful commentary on human ignorance and carelessness would thereby be exhibited.

PASSING THE CATHETER AND BOUGIE.

The catheter is a long, hollow, tubular instrument, and when not made of some elastic substance, so curved as to adapt itself to the urethra. It is used to remove the urine from the bladder when the person, from injury or disease, is unable to void it. The manner of passing or introducing the instrument is thus described: "Take the organ of the patient, near the glans, between the finger and thumb of your left hand (standing beside him) while with your right you introduce the point of the instrument into the urinary passage, its convex side towards his knees; while you push the catheter down the urethra, endeavor, at the same time, to draw up the organ on it. When you first introduce it, the handle will of course be near the belly of the patient, and as it descends will be thrown farther from it, until it enters the bladder, which will be known by the flow of the urine. If you cannot succeed while the patient is on his back, make him stand up, or place him with his shoulders and back on the floor, while his thighs and legs are held up by assistants. If still

foiled, place him again on his back, and when you have got the catheter as far down as it will go, introduce the forefinger, well oiled, into the fundament, and endeavor to push its point upwards while you still press it forward with the other hand. *Force is never, on any account, to be used.* Vary your position as often as you please; let the patient try it himself, but always remember it is by *humoring* the instrument, and not by violence, that you can succeed."

The bougie is introduced into the urethra principally to remove obstructions. Its introduction is thus effected: "Take the organ between your fingers and thumb, and pass the point of the instrument (which should be well oiled) down the urethra as directed for the catheter; when it has entered three or four inches, press the organ a little, and by *humoring* the bougie with one hand and the organ with the other, endeavor to pass it as far as may be wished. The patient himself will frequently succeed when every one else fails."

In the introduction of these instruments the utmost care must be exercised, and the same care is equally necessary in their removal, or fearful consequences may ensue. There is, perhaps, almost as much injury done by their unskillful removal as by unskillful efforts to introduce them. Whenever access to a practical surgeon can be had in time, no effort to use the instruments should be made by the unskillful prior to receiving some practical instructions, after which there should be little or no difficulty nor danger attending their use.

The urethra of the female being wider, shorter, and less complex, there is generally but little difficulty experienced in the use of the female catheter.

INJECTIONS.

In diseases of females the use of injections is often rendered imperative. When injections are used simply as a wash for purposes of cleanliness, an erect position of the body is desirable, because in this position the object can be best accomplished. When they are used for the purpose of applying fluid preparations to specific parts, the case is different. "In such case," says Dr. ASHWELL, "it is essential that the patient should lie, when the in-

jection is thrown into the vagina, that the pelvis be raised by placing a sofa-cushion under the hips, so that the fluid may easily reach the upper extremity of this canal, and that whatever quantity be injected, it shall be retained for ten or fifteen minutes in direct apposition with the parts. To effect this, the nurse should make firm pressure on the vaginal orifice by a napkin accurately applied."

THE PULSE.

The pulse, which shows the rapidity and strength of the heart's action, and is therefore to some extent indicative of the condition of the system, may be most conveniently felt about one inch above the root of the thumb, and half an inch from the outside of the arm. The number of pulsations varies much at different periods of life, and also in the sexes. In the new-born infant, it is 130 per minute; during the first year, 115; during the second year, 100; during the third, 95; from the third to the fourteenth, 80; from the fourteenth to the twenty-first, 75; from the twenty-first to the sixtieth, 70; and in extreme old age a slight increase again to 75 per minute. The pulse of the female usually exceeds that of the male by ten to twelve beats per minute.

LIMITING PROGENY.

That there is such a thing as over-production, or having too many children for one's bodily health and condition in life, seems not only obvious but self-evident to all; for the great bane and curse of all civilized nations at this day is the production of progeny beyond the means of education and support; and every intelligent physician, in active practice, can bear daily and ample testimony to its manifold evils both upon mothers and children. In the first place, excessive child-bearing debilitates and prematurely breaks down the health of females, and almost always entails upon them a series of the most distressing complaints, from which they very seldom wholly recover in after-life, even after the period of child-bearing ceases. Secondly, children born in too rapid succession are very subject to rickets and idiocy, and are nearly always small, puny, sickly, very susceptible to

morbific agents, and usually die young. If man were reasonable and considerate in his idea of the sexual relations, and would regulate his dietetic habits to the disuse of all alcoholic and fermented liquors, tea, coffee, tobacco, and flesh meats, so that he could control his animal passions, and then place the reproductive function under the dominion of the judgment and will, this enormous crying sin would cease from a cessation of the cause; but no ideas of any removal of the cause have ever yet appeared; and drugs, preventives, and abortions—remedies, if possible, worse than the evil—seem to be the extent of intellectual vision in this direction. It is useless for moralists and theologians to declaim against the present disastrous means in use to prevent excessive prolificacy; for when a physical neglect eventuates in a moral evil, the only way to remedy the evil is to remove the neglect; and in this instance, excessive indulgence and over-prolificacy are the neglect, and drugs, preventives, and abortions the evil. It is true that Nature has, to some extent, and doubtless in her wise economy amply, provided against over-production, for during lactation and pregnancy, and also during most of the last half of each menstrual month, woman is naturally sterile; but this is not adequate to morbid passions goaded on by stimulating drinks and a heating flesh diet, with rich, exciting condiments which fire up the whole organism; and hence this mammoth national curse prevails everywhere. As to the one thousand and one different means now in use, all claiming to be "infallible," with one exception they are all inefficient, unreliable, and worthless, most of them more or less injurious, and many of them positively dangerous; and the annual mortality of females in this country from this cause alone is truly horrifying.—Dr. PLATT's *Human Life Prolonged*.

PRODUCING BEAUTIFUL CHILDREN.

That the child is affected in the womb of the mother, through the influences apparently connected with objects by which she is surrounded, appears to have been well known in ancient days. It has been assumed, but with what degree of truth it would be difficult to determine, that a knowledge somewhat corresponding in character to

this was possessed by Jacob, and inspired the contract with Laban by which he so greatly augmented his hire. Many evidences are found in ancient history, especially among the more refined nations, showing that certain expedients were resorted to by which their females, during the period of utero-gestation, were surrounded by the superior refinements of the age, with the hope of thus making upon them impressions which should have the effect of communicating certain desired qualities to the offspring. For this reason apartments were adorned with statuary and paintings, and special pains were taken not only to convey favorable impressions, but also to guard against unfavorable ones being made, upon the mind of the pregnant woman. It is also well known that many singular appearances, and even deformities in the offspring, are often attributed to sudden violent emotions or peculiar impressions which, at this time, seriously affected the female. Hence it is given as a fact, that through impressions made upon the mind of the expectant mother, the beauty and perfection of the offspring may, to some extent at least, be secured. Therefore it is urged that during the period of utero-gestation, especial pains should be taken to render the life of the female as harmonious as possible, that her surroundings should all be of a nature calculated to inspire the mind with thoughts of physical and mental beauties and perfections, and that she should be guarded against all influences, of whatever character, having a deteriorating tendency.

PLURAL BIRTHS.

The average of twins is given as being about one in seventy-five births. The birth of twins has been found to depend considerably upon the age of the female. It is given as the result of observation that three-fifths of all twin-births are of women over thirty years of age, the proportion of such births increasing from that age upwards. The average of triplets is said to be about one in six hundred. In two hundred thousand births, the chances are that one will be quadruplets, or four at a birth. Cases of five at a birth have also occurred, but they have been so rare that their number is not known to exceed a dozen. In the human species one at a birth undoubtedly ap-

pears to be the order of nature, and whenever this order is not observed there is considerable reason to apprehend some imperfection in the children. In the case of twins it very often happens that they are puny, feeble, and short-lived, and hence the birth of twins is generally an undesired event. In those cases where more than two are brought into the world at one birth, the result is more frequently unfavorable—the children, in many instances, surviving but for a short time. It is a common observation that twins usually bear a marked resemblance to each other. This fact is accounted for by Physiologists in the following manner: The condition of the parents at the time of conception, and the life, habits, and surroundings of the mother during the period of gestation influence the appearance of the offspring, and as these, in the case of twins, have an equal effect upon both of the children, they necessarily produce an appearance of sameness; and as they are ever varying and differing in each case of conception and pregnancy, they equally account for the differences in the appearance of children born of the same parents at different births.

FACTS AND ECCENTRICITIES.

Many curious facts and eccentricities have been, and are constantly being furnished by nature. A few of these may prove interesting, and, it may be, in certain emergencies, useful as information:

It is stated, as an effect of the association of the sexes, that the children of a woman by her second husband generally resemble her first husband more or less; that a negress, who has borne her first child to a white man, will always after have children of a lighter color than her own; and that, if a native woman of Australia, once have offspring by a white man, she can never after have children by a male of her own race.

Instances are given of women having given birth to twins of different fathers—one of the children being white and the other black. A case is related by Dr. HENRY of a native creole woman of Brazil who gave birth to three children at one confinement, one being white, the other black, and the third brown. Hence it follows that conceptions may result from separate as-

sociations at such short intervals apart as to occasion the fetal developments to mature simultaneously. A still more singular occurrence, however, is that of superfetation, of which the most remarkable cases are the following: On April 30, 1748, Marie Anne Bigaud, of France, gave birth to a boy at full term, and over four months thereafter, on the ensuing 16th of September, to a girl, also at full term. The boy lived two and a half months, and the girl a year. In Lyons, France, on January 20, 1780, Benoitte Franquet gave birth to a girl, and five months and six days thereafter to another girl, both at full term, and both lived. A number of less remarkable cases are reported, showing that it is possible for conceptions to take place after pregnancy—and from the case of Franquet it appears that it may even take place after the time of quickening.

It is said that the most remarkable case of prolificacy known to the world is that of a Russian peasant who lived in the eighteenth century. He had been twice married, and by his first wife had fifty-seven children in twenty-one confinements, and by his second wife, thirty-three children in thirteen confinements, each confinement being productive of two, three, or four children.

While it is generally known that the secretion of milk in the female continues for a certain period after confinement, it is not so generally known that many exceptions are reported, and some very singular ones, to this order of nature. Dr. LIVINGSTONE reports it as a not uncommon thing in Africa to see a child suckled by an aged woman. Sir HENRY SLOANE mentions a case of a sixty-eight years of age who nursed several of her grandchildren, although she had had no child herself for twenty years, and another instance has been reported by Dr. WM. A. GILLESPIE of Virginia, of a widow, who was sixty years of age, nursing her grandchild after her daughter's death. BAUDELOQUE, a French physician, gives a case where, during the sickness of the mother, her daughter, who was only eight years of age, performed the office of nurse to the child for a month. The flow of milk has been known to be occasioned in women who had never been pregnant by the repeated application of a child to the breast, and a case is reported of a lady who had pre-

viously been supposed to be barren becoming pregnant shortly after a flow of milk had been produced in this manner. It is stated that in the Cape Verd Islands, virgins, old women, and even old men, are frequently employed as wet-nurses. HUMBOLDT mentions an instance of a man, thirty-two years of age, who nursed his child for five months, and Captain FRANKLIN saw a similar case in the Arctic regions. Professor HULL, of Maryland, in 1827, exhibited to his class a negro, fifty-five years of age, whose bosom resembled that of a female, and who had often acted as wet-nurse in the family of his mistress. The structure of the male breast is similar to that of the female, and although the development is much more limited, these cases would seem to indicate that a corresponding development is not an impossibility.

That hermaphrodites ever had an existence is alike denied and credited by many. The term seems to be derived from an ancient myth, and it is said that "the true hermaphrodite of the ancients was, the man with male organs of generation, and the female stature of body, that is, narrow chest and large pelvis; or the woman with female organs of generation, and the male stature of body, that is, broad chest and narrow pelvis." There has been considerable confounding of the term from its ancient application. If it be used to express double sex, or a perfect union in one person of the sexual organs of both sexes, then, as no one has ever seen such a human form, it may be safely assumed that it never had an existence; but, if the term be used to indicate any malformation wherein the parts of generation appear to be a mixture of both sexes, then such conditions have frequently been seen and are well known to exist. Perhaps the most perfect condition of this kind was presented in the case of which RUDOLPH, a Prussian physician, gave a description, in 1825, before the Academy of Sciences, in Berlin. In that case the two sexes were, to a considerable degree, united in a child, its genital organs consisting of a testis on one side and an ovary on the other, of a uterus, vagina, and penis. The child had died shortly after its birth, and hence we are simply left to conjecture as to how this condition might have been affected by its growth. A remarkable instance of the union of both sexes, in an orang-outang, is mentioned by Dr. HARLAN. This ani-

mal had ovaries and oviducts, a uterus and vagina, and also perfect testes, vasa deferentia, and a penis, thus exhibiting a combination of the sexes so complete as to entitle it to be regarded as double sexed, or as a genuine hermaphrodite. In the lowest orders of life, hermaphroditism, in certain cases, appears to be the condition of nature, so that each individual is both male and female, capable of impregnating itself, and carrying on the work of reproduction without the concurrence of any other individual of its kind. In other cases, each individual is found to be both male and female, although incapable of reproduction of itself, so that copulation of two individuals is essential to reproduction, but in the act of copulation, it is said, one impregnates the other and both become impregnated at the same time.

In the male, the age of puberty is regarded as being from fourteen to sixteen, but cases are known where boys became fathers before they were ten years of age, and it is supposed that, in certain instances, the power of procreation may exist considerably earlier. Usually, when not impaired by evil habits, the power does not begin to wane until after the age of fifty has been attained, and no time can be designated for its total loss—many cases being known where men became fathers after passing their eightieth year, and it is said that old PARR was a father in his one hundred and fortieth year. Cases are reported of girls who became pregnant at the age of ten, and one case is given of a woman who became a grandmother before she was twenty-eight years old. Many instances are reported of women becoming mothers after their fiftieth year, and a few where confinements took place at the ages of sixty, sixty-two, and sixty-four, and some have even menstruated at the age of seventy. Thus, exceptional cases are ever occurring to preclude the possibility of establishing definite limits to the operations of nature.

The mixture of races is proved to have a good effect upon the progeny, but here again nature makes her exceptions, for the mixture of the Caucasian with the African results in a deterioration of the offspring, and if persisted in would eventually terminate in the annihilation of both races.

It is said that "nearly if not all creatures are capable of sustaining life during a period equal to about *eight* times that required for their growth and perfection; and as, on an average, it is well known that man does not arrive at full growth and maturity younger than twenty-five he should be capable of attaining an age of two hundred years. The number of men who have lived from 100 to 110 is stated to be 1000; from 110 to 120, 60; from 120 to 130, 29; from 130 to 140, 15; from 140 to 150, 6; and one 169." As a general rule, women live longer than men, although they never attain such extreme ages as men have attained, so that it is said that while there are many more old women than old men, none of the former are very old as compared with the latter. It is also given as a fact that, so far as can be ascertained, in all cases of longevity, the parents of the persons were healthy and long-lived, and that among the qualities transmissible to children none is more prominent than that of longevity. It is probable, however, that human advancement will have to progress for many years to come before such cases of longevity as are given above cease to be exceptional.

ADVICE.

It is at all times difficult to give available and useful advice, even upon matters which are in themselves definite and admit of definite advice; but where the subject is of itself indefinite, practical advice becomes almost impossible. It is evident that all instruction, either upon parts of or upon the entire human organization, should have for its object the prevention or mitigation of evil and suffering. If it were practically possible to instruct mankind fully upon every thing required for the preservation of health and the prevention of disease, and to induce them to observe such requirements—then there would be every reason to anticipate an end of the evils and sufferings under which they are now perpetually laboring, and which are constantly accomplishing their premature destruction; but as these things are practically impossible, in the existing condition of the race, the only useful course that can be pursued is that which has long since been adopted, and which consists, *first*, in furnishing, as far as human knowledge permits, and trusting to

its effect, such information as circumstances require; and *second*, in meeting existing evils, as far as possible, by the application of remedies. In reference to the first, some degree of certainty has been attained, and hence the information which we possess may be regarded as capable of accomplishing definite results; but so far as relates to the second, it is unfortunately true that human skill has not yet been able to reduce medicine to any exactitude, so that it still remains simply a matter of experiment, or, as it is sometimes called, an "experimental science." Profoundly impressed with this fact, the thinking minds of the medical profession have given us many testimonies indicating that, among the best informed physicians, it is a common regret that the means resorted to for the relief and cure of disease are so uncertain, or require the exercise of so much judgment to render them efficient, as to deprive them of most of their practical value.

This uncertainty has given rise to various "schools" of medicine, each professing certain superior modes of practice, and, which is more to be regretted, it has also led to the success of innumerable pretended remedies or "cure-alls," and even rendered the most fraudulent devices and practices possible; and further, which is worst of all, it almost precludes the possibility of designating a course of action by which sufferers may find certain relief or escape all chance of being victimized. It is a common practice to indulge in denunciations of particular "schools," but the absurdity and folly of this are evident—for, if allopathy be denounced, many thousands are ever ready to testify to having personally experienced its benefits; if an attempt be made to prove homeopathy a delusion, the world is full of living witnesses to the contrary; and the same is true, to a greater or less extent, of all the schools. Then, again, if what are called "patent medicines" are pronounced a humbug, there is scarcely a human throat in the land which has not been a thoroughfare for this class of remedies, and the error of that judgment which condemns them is made manifest by certificates outnumbering the drops of the ocean or the sands of the sea-shore. The fact is, or at least seems to be, that individual benefits have been derived from all these sources, and certain it is that the advice which indiscriminately denounces any of them will be accounted

of little worth, for of all human efforts that is the least successful which seeks to convince men to the contrary of what they believe to be their personal experience.

The very uncertainty, then, that seems inseparable, in the present state of human knowledge, from the use of medicines as remedial agents, renders it alike unsafe to recommend or denounce any school or nostrum. That nature has provided a remedy for every ill to which her creatures are subject, is a not uncommon opinion; but, if true, the difficulty still exists in knowing what remedies to apply in individual cases of disease. So far as our knowledge at present extends, no specific remedies can be relied upon. It is true, there may be a few exceptional diseases in which certain drugs almost invariably prove specifics, but even then their administration must be governed by the special manifestations of the disease in each particular case, and also by a variety of other circumstances. Hence, in treating of diseases, it cannot be said to the patient, take this or take that and be cured, it being wholly impossible to specify remedies the indiscriminate use of which will effect the ends desired. All that can be safely said consists in defining the course of treatment and noting the remedies which have thus far been found of any efficacy. Even the administration of these must be more or less an experiment. It may be among the possibilities of the future that medicine may become an exact science, enabling the specific designation, in all cases, of the remedies which will meet the emergencies; but, until this event does take place, nearly every case of disease must be, to some extent, the subject of experiment. From this no one can escape; and in this fact the most ordinary intellect should be able to recognize the importance of exercising proper judgment and caution as to the manner and by whom such experimenting shall be performed. It has been said that "if we must needs be dosed and drugged, let us have it *secundum artem* (according to rule), by those who are educated to the business." It is true, this may sound very much to some ears like saying, that if any slaughtering is to be done let it be done by the practised butcher; to which it may be answered that, truly, every discreet person who is in need of that kind of skill will not fail to employ it.

Under the circumstances, then, those who are sound

should inform themselves of the means by which health may be preserved and disease avoided, for it is much easier to preserve the former than to remove the latter; and those who, through ignorance or indiscretion, unfortunately experience the evil consequences of disease, should make such use of the judgment by which they are gifted as to secure all the known means of relief without hazard of imposition. The only certain means of doing this have already been designated in the chapter on diseases and remedies; and where the individual is not personally competent to exercise the discrimination which his case demands, he can always have recourse to those who are.

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CLARK'S BOOK OF SECRETS.

READER—In publishing this Book of Secrets, we do it with the firm belief that it will be the means of doing much good to thousands who have never before had an opportunity to obtain them. Many of these Secrets have already been put in market, and are now having very large sales. They are, of course, sometimes called by different names than those given here. Whoever puts any of these valuable Medicines in market can give them such names as they think most attractive, or that might have a tendency to add to their sales. From the sales of some of these Secrets hundreds of thousands of dollars have been made, and they are now so firmly established in this country, and also in Europe, that they will probably be sought after as long as time lasts.

If you desire to commence business for yourself, select from this Book one of these Secrets, one that you think would be the most saleable in your locality, and manufacture it in small quantities at first. As your sales improve, and you see your way more clear to increase your business, invest more largely in goods. Sell to families and stores, and if you have the means at your command, leave it on commission and advertise it in every way that you can. Talk about your goods whenever you have an opportunity, and by so doing you will get others inquiring about them, and you will soon have a business started, with an income from it that will surprise you. The Patent Medicine business is the most profitable, and the surest return (if properly advertised), of any business that you can engage in. If you are unable to put up any of these valuable Remedies, but have the desire to do so,

we would suggest that you write out the Recipe for making the World's Fair Premium Vinegar, and take a sample of vinegar with you in a bottle to show storekeepers and families, and sell them the Secret of manufacturing this excellent vinegar for 50 cents. Any person tasting this article will willingly pay you the price you charge for the Recipe. Persons keeping provision stores will make money by purchasing this article from you. You can sell 20 Recipes a day, at 50 cents each (\$10 a day, all profit). If some object to paying your price, do not refuse to take less, rather than not sell to them. You can use any other Secret that you wish in the same manner, but we mention the Vinegar Recipe because that is an article that can be sold to almost everybody.

If you do not wish to leave home, sell all you can in your own town, and then advertise in your local newspaper, telling them what you have for sale, and what it will do. The Medicines will always sell. Invalids abound in all communities, and the Remedies you have in this Book of Secrets are the best the world ever produced. After you have got a little start, advertise more largely, and you will find your profits steadily increasing, and by continued exertion, and constant effort, you will establish yourself in a permanent and profitable business.

RECIPES.

To Cure Bleeding and Blind Piles.—This is the celebrated French Surgeon (Dr. Chevazzi's) great cure for piles. If the piles be very hot and painful, they should be well fomented by means of a sponge, with hot camomile and poppy-head tea, three times a day, for half an hour each time, and at bed-time a hot white bread poultice should be applied. If the heat be not great, and if the pain be not intense, the following ointment will be found efficacious: Powdered opium, one scruple; camphor (powdered by means of a few drops spirits of wine), half a drachm; powdered galls, one drachm; spermaceti ointment, three drachms. Mix.—To be applied night and morning. The bowels should be kept gently opened by
"or two teaspoonfuls of compound confection of senna,

taken every morning. The tea is made from 4 poppy-heads and 4 oz. camomile blows, boiled in two quarts of water half an hour. This is a valuable Recipe.

To Cure Sick Headache.—Gather sumac-leaves in the Summer, and spread them in the sun a few days to dry. Then powder them fine, and smoke, morning and evening for two weeks, also whenever there are symptoms of approaching headache. Use a new clay pipe. If these directions are adhered to this medicine will surely effect a permanent cure.

To Cure a Consumptive Cough.—Take three pints rain water, half pound raisins chopped fine, three tablespoonfuls flax seed, sweeten to a syrup with honey, and boil down to a quart. Add three teaspoonfuls of extract of anise. Take a tablespoonful eight times a day.

To Cure Baldness.—Cologne water, two ounces; tincture of cantharides, two drachms; oil of lavender or rosemary, of each ten drops. These applications must be used twice a day for three or four weeks, but if the scalp becomes sore, they must be discontinued for a time, or used at longer intervals.

When the hair falls off from diminished action of the scalp, preparations of cantharides are excellent. The following will cause the hair to grow faster than any other preparation: beef marrow soaked in several waters, filtered and strained, half a pound; tincture of cantharides (made by soaking for a week one drachm of powdered cantharides in one ounce of proof spirit), one ounce; oil of bergamot, 12 drops.

Whooping Cough.—Dissolve a scruple of salt of tartar in a gill of water; add to it ten grains of cochineal; sweeten it with sugar. Give to an infant a quarter teaspoonful four times a day; two years, old half a spoonful; from four years, a tablespoonful. Great care is required in the administration of medicines to infants. We can assure paternal inquirers that the foregoing may be depended upon.

Liquid Glue.—Dissolve one ounce of borax in a pint of boiling water; add two ounces of shellac, and boil in a covered vessel until the lac is dissolved. This forms a very useful and cheap cement, and withstands damp much better than the common glue. This is superior to any Prepared Glue in market.

Phosphorus Paste for Destroying Rats and Mice.—Melt one pound of lard, with a very gentle heat, in a large mouthed bottle or other vessel plunged into hot water; then add half an ounce of phosphorus, and one pint of proof spirit; cork the bottle securely, and

as it cools shake it frequently, so as to mix the phosphorus uniformly; when cold pour off the spirit (which may be preserved for the same purpose), and thicken the mixture with flour. Small portions of this paste may be placed near the rat holes, and being luminous in the dark it attracts them, is eaten greedily, and is certainly fatal. Put it up in small tin boxes, and sell at 25 cents each. There is a firm in this city that has made over thirty thousand dollars manufacturing this article.

Dr. Parker's Great Cure for Diarrhoea and Cramps in Stomach.—Two parts tincture camphor, tincture opium, tincture African cayenne, essence peppermint, one part tincture rhubarb. Mix. Dose.—Half teaspoonful for an adult, and from five to ten drops for a child. Repeat the dose in fifteen minutes if the patient is not relieved. Bathe the bowels with strong vinegar. This is one of the most valuable Secrets that this book contains. It has saved hundreds of lives. If you manufacture this article and sell a few bottles in any locality, its great virtues will soon spread far and wide, and you will have orders from families, druggists, and others. Put it up to retail for 25 cents.

World's Fair Premium Vinegar.—Take five gallons lukewarm water, add one pound cream tartar, two pounds alum, one gallon of common molasses, half a gallon of whiskey, one gallon of yeast. Let all stand in the warm water one hour to dissolve, then add cold water. Let stand three days with the bung open. This makes forty-two gallons. In all cases the barrel should be full. This secret can be sold to grocers and storekeepers all over the United States.

Dropsy.—Take one pint of bruised mustard seed, two handfuls of bruised horseradish root, 8 ounces of lignum vitæ chips, and 4 ounces of bruised Indian hemp root. Put all the ingredients in seven quarts of cider, and let it simmer over a slow fire until it is reduced to 4 quarts. Strain the decoction, and take a wineglassful four times a day, for a few days, increasing the dose to a small teacupful three times a day. After which use tonic medicines. This remedy has cured cases of dropsy in one week's time which had baffled the skill of many eminent physicians. For children the dose should be smaller.

Indelible Marking Ink Without a Preparation.—Dissolve separately one ounce of nitrate of silver, and one and a half ounces of sub-carbonate of soda (best washing soda) in rain water. Mix the solutions, and collect and wash the precipitate in a filter; whilst still moist rub it up in a marble or hard wood mor-

tar with three drachms of tartaric acid; add two ounces of rain water, mix six drachms of white sugar, and ten drachms of powdered gum arabic, half an ounce of archil, and water to make up six ounces in measure. It should be put up in short drachm bottles, and sold at 25 cents. This is the best ink for marking clothes that has ever been discovered. There is a fortune in this recipe, as a good marking ink is very saleable.

Clark's Crystal Perfumed Starch Polish.—Melt over a slow fire 5 pounds refined paraffine, and when it is all melted add two hundred drops of oil of citronelli. Place several new round pie pans, well oiled with lard oil or sweet oil, on a level table, and pour about six tablespoonfuls of the Polish into each pan. Let them stand until they are cool enough to lift into a pail or basin of water; let the pan float on the water a moment so as to cool the bottom, and then submerge or press down the pan into the water, until it is cool enough to stamp the Polish out into cakes. This must be done before it gets too hard, and therefore it will require close watching. Have a round tin stamp made to cut cakes about the size of a candy lozenge. Stamp them out, and let them cool well before taking them out of the pans. Put it up in square paper boxes (nine cakes in each, retail at 5 cents a box). Thirty cakes, in oval boxes, 25 cents. The cost of the 25 cent boxes, filled ready for market, is about 5 1-2 or 6 cents; the small boxes about 1 1-2 cents. They are also put up in 10 cent boxes, which is a very saleable size. Directions.—To a pint of boiling starch stir in two of the cakes or tablets — three to a quart. This gives an elegant lustre to linen or muslin, and imparts a splendid perfume to the clothes, and makes the iron pass very smoothly over the surface. It requires but half the ordinary labor to do an ironing. It is admired by every lady. It prevents the iron from adhering to the surface, and the clothes remain clean and neat much longer than by any other method known. Over six thousand stores are selling this article in New York and Brooklyn. For ladies, we know of no business so suitable and pleasant to engage in. If you desire further information write your questions briefly and we will answer them on once.

To Remove Grease or Stains from Clothing.—Ordinary Benzine is as good a grease eradicator as is now used. Put up in four ounce bottles and label it "The Nation's Grease Extractor," and sell for 20 or 25 cents. Benzine generally costs about 15 cents a gallon. Dip the corks in wax.

Pomatusms.—For making Pomatusms, the lard, fat,

suet, or marrow used, must be carefully prepared by being melting with as gentle a heat as possible, skimmed, and cleared from the dregs which are deposited on standing. Take mutton suet, prepared as above, one pound; lard, three pounds; carefully melted together, and stirred constantly as it cools, two ounces of oil bergamot being added just after lifting the pomade from the fire. **HARD POMADE.**—Mutton suet and lard each one pound; white wax, four ounces; oil of bergamot, one ounce. Put up in short, large-mouthed bottles, and sell at 15 or 20 cents.

Cement for Broken China, Glass, etc.—The following recipe, from experience, we know to be a good one, and, being nearly colorless, it possesses advantages which liquid glue and other cements do not:—Dissolve half an ounce of gum acacia in a wineglass of boiling water; add plaster of Paris sufficient to form a thick paste, and apply with a brush to the parts required to be cemented together.

Sore and Weak Eyes.—Sulphate of zinc three grains, tincture of opium, ten drops, water two ounces. To be applied three or four times a day.

Another.—Dissolve five grains acetate of morphia, ten grains sugar of lead, and six grains sulphate of zinc, into five ounces rose water. Bathe the eyes freely three times a day. For Scrofulous Sore Eyes, take blue violets, dig them up, top and root, wash clean, dry them, and make a tea. Drink several times a day, wetting the eyes each time, and it will soon effect a cure.

Cut or Bruise.—Apply the moist surface of the inside coating or skin of the shell of a raw egg. It will adhere of itself, leave no scar, and heal without pain.

Wens.—Take the yolk of eggs, beat up, and add as much fine salt as will dissolve, and apply a plaster to the wen every ten hours. It cures without pain or any other inconvenience.

Sprained Ankle or Wrist.—Wash the ankle very frequently with cold salt and water, which is far better than warm vinegar or decoctions of herbs. Keep the foot as cool as possible to prevent inflammation, and sit with it elevated on a high cushion. Live on low diet, and take every day some cooling medicine such as Epsom salts. It cures in a few days.

Best Blacking for Boots and Shoes.—Ivory black one and a half ounce, molasses one and a half oz., sperm oil three drachms, strong oil of vitriol three drachms, common vinegar half a pint. Mix the ivory black, molasses and vinegar together, then mix the sperm

oil and oil of vitriol separately, and add them to the other mixture.

Freckles.—Muriate of ammonia half a drachm, lavender water, two drachms rain water, half a pint. Applied with a sponge, two or three times a day.

To Take Marking Ink out of Linen.—A saturated solution of cyanuret of potassium, applied with a camel's hair brush. After the marking ink disappears, the linen should be well washed in cold water.

Hair Dye.—This preparation has held the market in Europe for several years, and gives entire satisfaction. Solution No. 1.—Hydrosulphuret of ammonia, one ounce, solution of potash, three drachms, distilled or rain water, one oz. (all by measure). Mix, and put into small bottles, labelling it No. 1. Solution No. 2.—Nitrate of silver, one drachm, rain water, two ounces. Dissolved and labelled No. 2. Directions.—The solution No. 1 is first applied to the hair with a tooth-brush, and the application continued for fifteen or twenty minutes. Then let the hair dry a short time. The solution No. 2 is then brushed over, a comb being used to separate the hairs and allow the liquid to come in contact with every part. Care must be taken that the liquid does not come in contact with the skin, as the solution No. 2 produces a very permanent dark stain on all substances with which it comes in contact. If the shade is not sufficiently deep, the operation may be repeated. The hair should be cleansed from grease before using the dye. This can be easily done by washing the head in clear water, adding thereto, about two tablespoonfuls of ordinary washing soda. Dry the hair well with a towel. This Dye (No. 1 and No. 2, put up in a box together), is sold at 50 cents. A fine business can be built up by manufacturing and selling this Hair Dye.

Sore Throat.—Pour a pint of boiling water upon twenty or thirty leaves of common sage, let the infusion stand for half an hour. Add vinegar sufficient to make it moderately acid, and honey according to the taste. It must be used several times a day. Another excellent remedy is a strong solution of salt and water. Gargle every hour. A wet towel worn on the throat at night will assist in effecting a cure. For a Putrid Sore Throat use a gargle of brewer's yeast, six times a day, also bind thin slices of salt pork on the throat.

Dyspepsia.—One of the first things to be attended to is to regulate the bowels, which in this disease are always in a costive state. The best means of keeping the

loose is the eating of a handful of clean wheat bran, once or twice a day. This is the most simple and efficacious method of cleansing the stomach. It may be eaten from the hand, with a few swallows of water to wash it down, also use, to regulate the stomach and bowels the daily use of common salt, in teaspoonful doses, dissolved in a half tumblerful of water, taken in the morning fasting. Avoid rich diet, and use brown bread instead of that made of superfine flour.

The Best Pill in the World.—Two pounds of aloes, one pound of sassafras, four ounces of the extract of colocynth, half a pound of castile soap, two fluid ounces of oil of peppermint, and one fluid drachm of cinnamon. Mix and form into pills. These pills are the most celebrated of any in the world, and the fortunate manufacturer has accumulated over a million dollars from their sale.

Toothache.—Take equal parts of camphor, sulphuric ether, ammonia, laudanum, tincture of cayenne, and one-eighth part oil cloves. Mix well together. Saturate with the liquid a small piece of cotton, and apply to the cavity of the diseased tooth, and the pain will cease immediately. Put up in long drachm bottles. Retail at 25 cents. This is a very saleable preparation, and affords a large profit to the manufacturer.

Cure for Warts.—The easiest way to get rid of warts, is to pare off the thickened skin which covers the prominent wart; cut it off by successive layers, and shave it till you come to the surface of the skin, and till you draw blood in two or three places. Then rub the part thoroughly over with lunar caustic, and one effective operation of this kind will generally destroy the wart; if not, you cut off the black spot which has been occasioned by the caustic, and apply it again; or you may apply acetic acid, and thus you will get rid of it. Care must be taken in applying these acids, not to rub them on the skin around the wart.

To Destroy Flies in a room take half a teaspoonful of black pepper, one teaspoonful of brown sugar, and one tablespoonful of cream, mix them well together, and place them in a room on a plate, where the flies are troublesome, and they will soon disappear.

Preserving Eggs.—The following mixture was patented several years ago by Mr. Jayne, of Sheffield, England. He alleged that by means of it he could keep eggs two years. A part of his composition is often made use of—perhaps the whole of it would be better. Put into

a tub or vessel one bushel of quick lime, two pounds of salt, half a pound of cream of tartar, and mix the same together, with as much water as will reduce the composition, or mixture, to that consistency that it will cause an egg put into it to swim with its top just above the liquid; then put and keep the eggs therein.

French Polish for Boots and Shoes.—Mix together two pints of the best vinegar and one pint of soft water; stir into it a quarter of a pound of glue, broken up, half a pound of logwood chips, a quarter of an ounce of finely powdered indigo, a quarter of an ounce of the best soft soap, and a quarter of an ounce of isinglass. Put the mixture over the fire, and let it boil ten or fifteen minutes. Then strain the liquid, and bottle and cork it. When cold it is fit for use. The Polish should be applied with a clean sponge.

To Remove Water Stains from Black Crape.—When a drop of water falls on a black crape veil or collar, it leaves a conspicuous white mark. To obliterate this spread the crape on a table (laying on it a large book or paper to keep it steady), and place underneath the stain a piece of old black silk. With a large camel's hair brush, dipped in common ink, go over the stain; and then wipe off the ink with a small piece of old soft silk. It will dry immediately, and the white mark will be seen no more.

To Cure Pains in the Feet Occasioned by Walking.—If your feet become painful from walking or standing too long, put them into warm salt and water, mixed in the proportion of two large handfuls of salt to a gallon of water. Sea water, made warm, is still better. Keep your feet and ankles in the water until it begins to feel cool, rubbing them well with your hands. Then wipe them dry, and rub them long and hard with a coarse towel. Where the feet are tender, and easily fatigued, it is an excellent practice to go through this practice regularly every night, also on coming home from a walk. With perseverance this has cured neuralgia in the feet.

Fever and Ague.—First clear the bowls with the fluid extract of senna and jalap, two drachms, infusion of cloves, two ounces. Mix. To be taken at a draught. In the cold stage give hot drinks, and try to excite warmth. In the hot ague give cooling drinks. Then give quinine, one scruple, alcohol, four ounces, sulphuric acid, five drops—(mix) in two tablespoonful doses every half hour: at the same time give five drop doses of tincture or fluid extract of varatum, and rub the patient

with dry towels. In the intermission give three grain doses, once in four hours, and continue it a fortnight after the cessation of the attacks.

The following is known as the Cuban Remedy for chills and fever: Just before the approach of the fever spread two plasters, about two inches wide, composed of black pepper bruised fine (not ground), mixed into a paste with the white of an egg. Immediately before the fever comes bind them on the inside of the wrists, and lie down. Do not remove them until the fever has passed off. If the fever is not entirely broken by the first application, apply fresh plasters of the same the next time the fever comes on.

To Make Your Teeth as White as Snow.

—Take one part of chloride of lime, and fifteen parts of prepared chalk, adding half an ounce of pulverized Peruvian bark, and a few drops of otto of roses. Use it thoroughly morning and evening.

To Make Champagne Cider for Four Cents a Gallon.

—Take five gallons of lukewarm water, add one gallon of common molasses, three pounds of brown sugar, one gallon of vinegar, one gallon of yeast, quarter of a pound of tataric acid. Let all stand in the warm water to dissolve one hour, then add cold water. Let stand forty-eight hours to work, with bung out. This makes forty-two gallons. In all cases the barrel should be full. To keep for a length of time add one pound of mustard. Bottle and seal it well.

To Drive Cockroaches from your Dwellings.—Strew pulverized hellebore root on the hearth, floor, or places they frequent at night. In the morning the roaches will be found either dead or dying, for such is their avidity for this plant, that they never fail to eat it when they can get it. Black pulverized hellebore may be had at all herb shops. Put up in small tin boxes, and retail at twenty-five cents.

To Cure Deafness.—Obtain pure pickered oil, and apply four drops morning and evening to the ear. Great care should be taken to obtain oil that is perfectly pure.

To Clear Your Dwellings from Bed Bugs.—Corrosive sublimate and the white of an egg, beat together, and laid with a feather around the crevices of the bedsteads and the sacking, is very effectual in destroying bugs in them. Tansy is also said to be very effectual in keeping them away. Strew it under the sacking bottom. The best exterminator is black pulverized hellebore root; it destroys them. Place it where the bugs will be likely to crawl.

To Make Paint for One Cent a Pound.

To one gallon of soft hot water, add four pounds sulphate zinc (crude). Let it dissolve perfectly, and a sediment will settle at the bottom. Turn the clear solution into another vessel. To one gallon of paint (lead and oil) mix one gallon of the compound. Stir it into the paint slowly for ten or fifteen minutes, and the compound and paint will perfectly combine. If too thick, thin it with turpentine. This recipe has been sold to painters as high as \$100 for the privilege to use the same in their business.

To Make Hens Lay the whole Year.—Give each hen half an ounce of fresh meat every day, and mix a small amount of red pepper with their food during the winter. Give them plenty of grain, water, gravel and lime, and allow no cocks to run with them.

How to Raise a Mustache in Six Weeks.—Tincture of benzoin comp. two drachms, tincture Spanish flies, two drachms, castor oil six ounces, oil bergamot one drachm, oil of verbena fifteen drops, strong alcohol nine ounces. Circulation should be stimulated first by friction with a rough towel. Apply to the whiskers and mustache morning and evening for four weeks.

To Make Cucumber Vines Bear Five Crops.—When a cucumber is taken from the vine let it be cut with a knife, leaving about the eighth of an inch of the cucumber on the stem, then slit the stem with a knife from its end to the vine, leaving a small portion of the cucumber on each division, and on each separate slit there will be a new cucumber as large as the first.

Silver Plating Fluid.—Take one ounce of precipitate silver to half an ounce of cyanate of potash, and quarter of an ounce of hypersulphate of soda; put all in a quart of water, add a little whitening, and shake before using. Apply with a soft rag. Put up in ounce bottles, and retail at 25 cents. This secret is worth a \$100 to an agent to sell to families.

Chapped Hands and Lips.—One quarter pound of honey, and one quarter pound of sal soda, with one pint of water. Apply often.

Pulmonic Wafers for Coughs.—White sugar, three and a half pounds, tincture or syrup of ipecac, two ounces, antimonial wine, one ounce, morphine, five grains, dissolved in a tablespoonful of water, with ten drops of sulphuric acid, half an ounce of tincture blood root, one ounce of syrup of tolu. Add these to the sugar, and mix the whole mass as confectioners do for lozenges,

and cut into lozenges of the ordinary size. Use from six to twelve of these in twenty-four hours. These wafers are equal to any made, and are generally sold at high prices.

Nervous Headache.—Extract hyoscyamus five grains, pulverized camphor five grains. Mix. Make four pills, one to be taken when the pain is most severe in nervous headache. Or three drops tincture nux vomica, in a spoonful of water, two or three times a day.

Felons.—One tablespoonful of red lead, and one tablespoonful of castile soap, and mix them with as much weak lye as will make it soft enough to spread like a salve, and apply it on the first appearance of the felon, and it will cure in ten or twelve days.

Restore Eyesight.—Let there be an occasional pressure of the finger on the ball of the eye. Let the pressure always be from the nose and towards the temples, and wash the eyes three times a day, in cold water. If this simple advice is followed, the day is not far distant when partial blindness shall disappear from the world.

Enlarged Veins of the Leg.—Apply firmly strips of leather spread with soap plaster. Generally it is better to support the whole limb with a strong calico bandage, which should be applied before getting out of bed. It is well to use friction, in connection with iodine ointment.

Costiveness.—Common charcoal is highly recommended for costiveness. It may be taken in tea or tablespoonful, or even larger doses, according to the exigencies of the case, mixed with molasses, repeating it as often as necessary. Bathe the bowels with pepper and vinegar. Or take two ounces of rhubarb, add one ounce of rust of iron, infuse in one quart of wine. Half a wineglassful every morning. Or take pulverized blood root, one drachm, pulverized rhubarb, one drachm, castile soap, two scruples. Mix, and roll into thirty-two pills. Take one morning and night. By following these directions it may perhaps save you from a severe attack of the piles, or some other kindred disease.

Washing Made Easy.—To save your linen and your labor. Pour on half a pound of soda two quarts of boiling water, in an earthenware pan; take half a pound of soap, sired fine, put it into a sauce pan with two quarts of cold water, stand it on a fire till it boils, and, when perfectly dissolved and boiling, add it to the former. Mix it well, and let it stand till cold, when it has the appearance of a strong jelly. Let your linen be soaked in

water, the seams and any other dirty part rubbed in the usual way, and remain till the following morning. Get your wash boiler ready, and add to the water about a pint basin full; when lukewarm put in your linen, and allow it to boil twenty minutes. Rinse it in the usual way, and that is all which is necessary to get it clean, and to keep it in good color. The above receipt is invaluable to housekeepers. Give it a trial.

Dye Silk Lilac.—For every pound of silk take one and a half pounds of archil, mix it well with the liquor, make it boil a quarter of an hour, dip the silk quickly, then let it cool, and wash it in river water, and a fine half violet, or lilac, more or less full, will be obtained.

To Take Ink Stains out of Mahogany.—Put a few drops of spirit of nitre in a teaspoonful of water, touch the spot with a feather dipped into the mixture, and, on the ink disappearing, rub it over immediately with a rag wet in cold water, or there will be a white mark which will not be easily effaced.

To Clean Marble.—Take two parts of common soda, one part of pumice-stone, and one part of finely powdered chalk; sift it through a fine sieve, and mix it with water; then rub it well over the marble, and the stains will be removed; then wash the marble over with soap and water, and it will be as clean as it was at first.

Paint.—To get rid of the smell of oil paint plunge a handful of hay into a pail of water, and let it stand in the room newly painted.

To Remove Offensive Breath.—For this purpose almost the only substance that should be admitted at the toilet is the concentrated solution of chloride of soda. From six to ten drops of it in a wineglass full of spring water, taken immediately after the operations of the morning are completed.

In some cases, the odor arising from carious teeth is combined with that of the stomach. If the mouth be well rinsed with a teaspoonful of the solution of the chloride in a tumbler of water, the bad odor of the teeth will be removed.

White Metal.—This is a splendid article for spoons, castors, ornaments, and in short, articles of every description. It closely resembles silver and may be used with great profit by the manufacture of an infinite variety of commercial articles of almost every description.

The alloy is ten ounces of lead, six ounces of bismuth, four drachms of antimony, eight ounces of brass, and ten

ounces of block tin, all melted together. This can be run into moulds or hammered into any shape, as it is perfectly malleable.

Rineworm.—The head is to be washed twice a day with soft soap and warm soft water; when dried the places to be rubbed with a piece of linen rag dipped in ammonia from gas tar; the patient should take a little sulphur and molasses, or some other genuine aperient, every morning; brushes and combs should be washed every day, and the ammonia kept tightly corked.

Imitation Pure Silver.—So perfect in its resemblance that no chemist living can detect it from pure virgin silver. It is all melted together in a crucible. Quarter of an ounce of copper, two ounces of brass, three ounces of pure silver, one ounce of bismuth, two ounces of saltpetre, two ounces of common salt, one ounce of argenic, one ounce of potash. Add a little borax to make it run easy.

Windsor Soap.—This is made with lard. In France they use lard with a portion of olive or bleached palm oil. It is made with one part of olive oil to nine of tallow. But a great part of what is sold is only curd (tallow) soap, and scented with oil of caraway and bergamot. The brown is colored with burnt sugar, or umber.

Honey Soap.—White curd soap 1 1-2 pounds, brown Windsor soap half pound. Cut them into thin shavings, and liquefy as directed above for scented soaps; then add four ounces of honey, and keep it melted till most of the water is evaporated; then remove from the fire, and when cool enough add any essential oil. According to Piesse the honey soap usually sold consists of fine yellow soap, perfumed with oil of citronella.

Martin's Splendid Black Ink.—Boil logwood, 22 pounds, in enough water to yield fourteen gallons of decoction. To 1000 parts of this decoction, when cold, add one part chromate of potash. The mixture is to be well stirred. The proportions are to be carefully observed, and the yellow chromate, not the bichromate, employed. This ink possesses some great advantages, to adhere strongly to paper, so that it can neither be washed off by water, nor even altered by weak acids, to form no deposit, and not to be in the least acted upon by steel pens.

Red Writing Ink.—Best ground Brazil wood four ounces, diluted acetic acid one pint, alum half an ounce. Boil them slowly in a covered tinned copper or

enamelled saucepan for one hour, strain, and add one ounce gum.

Yellow Ink.—Gamboge triturated with water, and a little alum added.

Green Ink.—Rub three and a half drachms Prussian blue, and three drachms of gamboge, with two ounces of mucilage, and add half pint of water.

Gold and Silver Ink.—Fine bronze powder, or gold or silver leaf, ground with a little sulphate of potash, and washed from the salt, is mixed with water and a sufficient quantity of gum.

Sympathetic or Secret Inks.—The solutions used should be so nearly colorless that the writing cannot be seen till the agent is applied to render it visible.

Boil oxide of cobalt in acetic acid. If a little common salt be added, the writing becomes green when heated; but with nitre it becomes a pale rose color.

A weak solution of sulphate of copper. The writing becomes blue when exposed to the vapor of ammonia.

Manifold Paper.—A process by which several letters can be written at one time. It is commonly known as copying paper. Mix lard with black lead or lamp-black, into a stiff paste, rub it over tissue paper with flannel, and wipe off the superfluous quantity with a soft rag. These sheets alternated with black carbon paper, and written with a hard pencil, will produce several copies of a letter at once.

To Make a Barrel of Good Soap.—Dissolve fifteen pounds of bar soap in fifteen gallons boiling water, and let it get cold. Cut up the soap in slices. When cold it will be thick like jelly.

Dissolve fifteen pounds of sal-soda in fifteen gallons more of boiling water, which will take three minutes, then add to this composition six pounds of unslacked lime; let these articles boil together twenty minutes. When cold and settled, turn off this fluid, and stir it up with the soap, be careful not to disturb the sediment, then add three pints of alcohol, and stir all the articles together.

To Clean Kid Gloves.—Make a strong lather with curd soap and warm water, in which steep a small piece of new flannel. Place the gloves on a flat unyielding surface—such as the bottom of a dish, and having thoroughly soaped the flannel (when squeezed from the lather), rub the glove till all dirt be removed, cleaning and re-soaping the flannel from time to time. Care must be taken to omit no part of the glove, by turning the fin-

gers, etc. The gloves must be dried in the sun, or before a moderate fire, and will present the appearance of old parchment. When quite dry, they must be gradually pulled out, and will look new.

Wash Equal to Paint.—Take half a bushel of unslacked lime, and slack it with boiling water, cover it during the process. Strain it, and add a peck of salt dissolved in warm water, three pounds of ground rice boiled to a thin paste put in boiling hot, half pound of Spanish whiting, and one pound of clear glue dissolved in warm water. Mix and let it stand several days. Keep it in a kettle, and put it on as hot as possible with a brush.

The above is the recipe used for the President's house at Washington. It is said to look as well and last as long as oil paint, on wood, brick or stone.

Mint Vinegar.—Put into a wide-mouthed bottle fresh, nice clean mint leaves enough to fill it loosely; then fill up the bottle with good vinegar, and after it has been stopped close for two weeks it is to be poured off clear into another bottle, and kept well corked for use. Serve with lamb when mint cannot be obtained.

Excellent Hair Wash.—Take one ounce of borax, half an ounce of camphor, powder these ingredients very fine, and dissolve them in one quart boiling water: when cool the solution will be ready for use; damp the hair frequently. This wash effectually cleanses, beautifies and strengthens the hair, preserves the color, and prevents early baldness. The camphor will form into lumps after being dissolved, but the water will be sufficiently impregnated.

Chilblains, Sprains, etc.—One raw egg well beaten, half a pint of vinegar, one ounce spirits of turpentine, a quarter of an ounce of spirits of wine, a quarter of an ounce of camphor. These ingredients to be beaten well together, then put in a bottle and shaken for ten minutes, after which, to be corked down tightly to exclude the air. In half an hour it is fit for use. To be well rubbed in, two, three, or four times a day. For rheumatism in the head, to be rubbed at the back of the neck and behind the ears. In chilblains this remedy is to be used before they are broken.

Oriental Perfume.—In manufacturing this article, follow the same directions, and use the same ingredients as are used in Clark's Crystal Perfumed Starch-Polish, published on another page of this book, with the simple alteration of using the oil of jasmine instead of the oil of citronella. In perfuming use one ounce oil of

jasmine to every pound and a half of paraffine. Stamp out in cakes one inch long, half inch wide, and one-eighth of an inch in thickness. Put each cake into a small sliding box, and sell at ten cents each. It is very saleable, and you can make money fast by putting this up. It is new, and has not been introduced as yet in many localities, and if you are first in the field you are sure to do a large business at it. Give it a trial.

Summer Champagne.—To four parts of seltzer water add one ounce of Moselle wine, or hock, and put a teaspoonful of powdered sugar into a wineglassful of this mixture; an ebullition takes place and you have a sort of champagne which is more wholesome in hot weather than the genuine wine known by that name.

Deafness.—Take three drops of sheep's gall, warm, and drop it into the ear on going to bed. The ear must be syringed with warm soap and water in the morning. The gall must be applied for three successive nights. It is only efficacious when the deafness is produced by cold. The most convenient way of warming the gall is by holding it in a silver spoon over the flame of a light. The above remedy has been frequently tried with perfect success.

Gout.—This is Col. Birch's recipe for rheumatic gout or acute rheumatism, commonly called in England the "Chelsea Pensioner." Half an ounce of nitre (saltpetre) half an ounce of sulphur, half an ounce of flour of mustard, half an ounce of Turkey rhubarb, quarter of an ounce of powdered guaiacum. Mix, and take a teaspoonful every other night for three nights, and omit three nights, in a wineglassful of cold water which has been previously well boiled.

Life Belts.—An excellent and cheap life belt, for persons proceeding to sea, bathing in dangerous places, or learning to swim, may be thus made:—Take a yard and three-quarters of strong jean, double, and divide it into nine compartments. Let there be a space of two inches after each third compartment. Fill the compartments with very fine cuttings of cork, which can be had at any cork-cutting establishment. Work eyelet holes at the bottom of each compartment to let the water drain out. Attach a neck-band and waist strings of stout boot-webb, and sew them on strongly.

Bleeding from the Nose.—From whatever cause, may generally be stopped by putting a plug of lint into the nostril; if this does not do, apply a cold lotion to the forehead, raise the head, and place both arms over

the head, so that it will rest on both hands: dip the lint plug, slightly moistened, in some powdered gum arabic, and plug the nostrils again; or dip the plug into equal parts of powdered gum arabic and alum. An easier and simpler method is to place a piece of writing paper on the gums of the upper jaw, under the upper lip, and let it remain there for a few minutes.

Poisons.—As a general rule, give emetics after poisons that cause sleepiness and raving: chalk, milk, butter, and warm water, or oil after poisons that cause vomitings and pain in the stomach and bowels, with purging; and when there is no inflammation about the throat, fiddle it with a feather to excite vomiting. Always send immediately for a medical man.

Moths.—A very pleasant perfume, and also preventive against moths, may be made of the following ingredients:—Take of cloves, caraway seeds, nutmeg, mace, cinnamon, and Tonquin beans, of each one ounce; then add as much Florentine orris-root as will equal the other ingredients put together. Grind the whole well to powder, and then put it in little bags, among your clothes, etc.

Bald Heads.—A most valuable remedy for promoting the growth of the hair is an application once or twice a day, of wild indigo and alcohol. Take four ounces of wild indigo, and steep it about a week or ten days in a pint of alcohol, and a pint of hot water, when it will be ready for use. The head must be thoroughly washed with the liquid, morning and evening application being made with a sponge or soft brush. Another excellent preparation is composed of three ounces of castor oil, with just enough alcohol to cut the oil, to which add twenty drops tincture of cantharides, and perfume to suit. This not only softens and imparts a gloss to the hair, but also invigorates and strengthens the roots of the hair.

Dry Cough.—Take of powdered gum arabic half an ounce; liquorice-juice half an ounce. Dissolve the gum first in warm water, squeeze in the juice of a lemon, then add of paregoric two drachms; syrup of squills one drachm. Cork all in a bottle, and shake well. Take one teaspoonful when the cough is troublesome.

Corns.—Boil a potato in its skin, and after it is boiled take the skin and put the inside of it to the corn, and leave it on for about twelve hours; at the end of that period the corn will be nearly cured.

Black Silk Reviver.—Boil logwood in water half an hour, then simmer the silk half an hour, take it out and put into the dye a little blue vitriol or green

copperas; cool it and simmer the silk for half an hour. Or, boil a handful of fig leaves in two quarts of water until it be reduced to one pint; squeeze the leaves, and bottle the liquor for use. When wanted sponge the silk with it.

Boils.—These should be brought to a head by warm poultices of camomile flowers, or boiled white lily root, or onion root, by fermentation with hot water, or by stimulating plasters. When ripe they should be destroyed by a needle or lancet. But this should not be attempted until they are fully proved.

Bunions.—May be checked in their early development by binding the joint with adhesive plaster, and keeping it on as long as any uneasiness is felt. The bandaging should be perfect, and it might be well to extend it round the foot. An inflamed bunion should be poulticed, and larger shoes be worn. To line 12 grains, lard or spermaceti ointment half an ounce, makes a capital ointment for bunions. It should be rubbed on gently twice or three times a day.

Cautions in Visiting the Sick.—Do not visit the sick when you are fatigued, or when in a state of perspiration, or with the stomach empty—for in such conditions you are liable to take the infection. When the disease is very contagious, take the side of the patient which is near the window. Do not enter the room the first thing in the morning before it has been aired; and when you come away take some food, change your clothing immediately, and expose the latter to the air for some days. Tobacco smoke is a fine preventive of malaria.

To Destroy the Taste of Medicine.—Have the medicine in a glass as usual, and a tumbler of water by the side of it, then take the medicine and retain it in the mouth, which should be kept closed, and if you then commence drinking the water the taste of the medicine is washed away. Even the bitterness of quinine and aloes may be prevented by this means.

Cancer.—The following is said to be a sure cure for cancer:—A piece of sticking plaster is put over the cancer, with a circular piece cut out of the centre, a little larger than the cancer, so that the cancer and a small circular rim of healthy skin next to it is exposed. Then a plaster, made of chloride of zinc, blood root and wheat flour, is spread on a piece of muslin, the size of this circular opening, and applied to the cancer for twenty-four hours. On removing it, the cancer will be found burned into and appear of the color and hardness of an old shoe

sole, and the circular rim outside of it will appear white and parboiled, as if scalded by hot steam. The wound is now dressed, and the outside rim soon separates, and the cancer comes out in a hard lump, and the place heals up. The plaster kills the cancer, so that it sloughs like dead flesh, and never grows again. The remedy was discovered by Dr. King, of London, and has been used by him for several years with untailing success, and not a case has been known of the re-appearance of the cancer when this remedy has been applied.

Cheap and Good Vinegar.—To eight gallons of clear rain water add three quarts of molasses; turn the mixture into a clean tight cask, shake it well two or three times, and add three spoonfuls of good yeast, or two yeast cakes, place the cask in a warm place, and in ten or twelve days add a sheet of common brown wrapping paper smeared with molasses, and torn into narrow strips, and you will soon have good vinegar. The paper is necessary to form the "mother" or life of the vinegar.

Ginger Beer.—White sugar, twenty pounds; lemon or lime juice, eighteen (fluid) ounces; honey, one pound; bruised ginger, twenty-two ounces; water, eighteen gallons. Boil the ginger in three gallons of the water for half an hour; then add the sugar, the juice, and the honey, with the remainder of the water, and strain through a cloth. When cold, add the white of one egg, and half an ounce (fluid) of essence of lemon: after standing four days, bottle. This yields a very superior beverage, and one which will keep for many months.

Ginger Beer Powders.—Powdered white sugar, two drachms; powdered ginger, five grains; carbonate of soda, twenty-six grains; mix, and wrap in blue paper. Dissolve each separately in half a glass of spring water; and drink while in a state of effervescence.

Capital Ginger Wine.—Boil together, for half an hour, seven quarts of water; six pounds of sugar, two ounces of the best ginger, bruised; and the rinds of three lemons. When lukewarm, put the whole into a cask, with the juice of the lemons, and a quarter of a pound of sun raisins; add one spoonful of new yeast, and stir the wine every day for ten days. When the fermentation has ceased, add half an ounce of isinglass, and half a pint of brandy: bung close, and in about two months it will be fit to bottle.

Infusion of Hops.—Hops, six ounces: boiling water, one pint; soak four hours. Dose, half a wine-glassful. This is an excellent tonic.

Imitation of Cognac Brandy.—Equal to the finest French genuine.—Procure three quarts of the best American brandy, and mix this with one gill of rectified spirits of wine, half an ounce of dulcified spirits of nitre, and a quarter of an ounce of clean lime water; finally drop into the mixture six bruised prunes. The above will cost but little, and after twenty-four hours in bottle will be found to be equal to the finest French brandy imported, while the imitation will cost little more than eighteen pence per pint to make.

American Gin.—Procure one gallon of proof spirit, and one ounce of juniper berries, and let them steep together for a week, then take a quarter of an ounce of oil of juniper berries, and to this add ten drops of oil of turpentine and five drops of oil of sweet fennel seeds. Rub these three oils together with a sufficient quantity of loaf sugar to absorb the oils, after which, add gradually the eighth of a pint of rectified spirits of wine. Stir it till the whole is thoroughly incorporated and mix it well in the proof spirits. The next day add half a pint of clean lime water and fine it with a bit of rock alum the size of a pea. Strain off when clear—add two or three quarts of sweetened water to bring it to the strength of what is termed extra strong or strong; this will produce twelve or fourteen pints of American gin, at a cost of little more than 16 cents per pint, and is made without distillation.

Bordeaux Wine Imitated.—Take a quart of fine American cider, and an equal quantity of port wine, mix and shake them, put the mixed liquor in bottles, and cork them well, and let the bottles be laid on their sides. In one month it will be a very good imitation of foreign Bordeaux wine.

Seltzer Aperient.—Two pounds heavy carbonate of magnesia; one and a half pounds tartaric acid (crystals); one and a half pound best loaf sugar; one pound bi-carbonate of soda. Each dried carefully and separately powdered (fine). Mix and add one-half fluid drachm of essence of lemon and orange (each). Pass through a fine sieve, put into warm dry bottles, cork tightly, and keep in a dry place. Note, one pound of calcined magnesia can be substituted in the above for two pounds of carbonate. The name *alone* it must be remembered is copyrighted.

Remedy for Love of Strong Drink.—Sulphate of iron, five grains; peppermint water, eleven drachms; spirit of nutmeg, one drachm. To be taken twice a day in doses of about a wine-glassful or less, with

or without water. This recipe is not only an inestimable boon to the victim of strong drink, but properly "pushed" is capable of yielding a handsome income from its manufacture. This remedy is prepared by different persons under different titles, and sold at from \$1 to \$5 per bottle.

Hunting and Trapping.—Strong smelling substances are the best baits, other things being equal; and if the smell of the kind of animal to be caught can be given to the bait in any way, it will be sure to lure the animal to the trap. If a fox skin be dragged along the ground in the direction of the trap, every fox striking the trail will follow it up. So it is with other animals. Beaver bait is made thus: The castor or bark stone, which is found in the male beaver, is pressed from the bladder-like bag which contains it into a vial with a wide mouth. Five or six of these stones are taken, and a powdered nutmeg, a dozen or more cloves, a teaspoonful of ground cinnamon, all mixed with alcohol or whiskey until it is about as thick as good syrup, cork the bottle and keep three or four days. In using this it should be employed for attracting the beaver toward the trap, but not be put into it. For the beaver has a habit when he smells the bark stone of another beaver of covering it with leaves and twigs and then voiding his own bark-stone or scent upon it. Doing this, he would be more likely to cover the trap than to be caught. What the object of this is is of course unknown; but it is similar to the voiding of urine by dogs, foxes and wolves in spots already used by another animal for the same purpose.

But the beavers will take any fresh root or sapling for bait. The muskrat will take carrots, potatoes, apples, or any similar food. All of the weasel tribe—the mink, sable, fisher, skunk, ordinary weasel, etc., will take fish, fresh or salt. When using the latter, it should be toasted, so as to emit more smell. Old hunters, to get a good "fish smell," cut up any fresh fish, put the pieces into a bottle, and let it be in as warm a place as convenient for several days. As it decays the fish oil rises, and this oil they put on any bait they happen to have. All of the weasel tribe, as well as foxes and wolves, are fond of any kind of fowl. The heads and legs and any other parts of both wild and domestic fowl are the best of bait. Even feathers scattered around a trap make the thing more attractive and real. A little musk mixed with assafoetida, or mixed like the bark-stone, or even a muskrat skin, fixed so as to drag along the ground toward a trap, will make most of this tribe, as well as the fisher, follow it up to the trap. A strong piece of codfish will do the same. Some

old hunters just keep one of these trail-bags tied by a string to their belt and let it drag as they go from trap to trap. This multiplies their chances of having something in them next morning. Another secret of old hunters is to take the parts peculiar to the sex of the female wolf, fox or dog, and preserve it in alcohol or whiskey for use. A small piece of this is used in drawing either fox or wolf to traps, and proves irresistible to the male, and no matter from which species it is taken, it proves alike attractive to either fox or wolf. It is not used as a bait, that is, as food, but as the trail or drag is to bring the animal toward the trap. The trap may be baited as usual, or this substance may be suspended over the trap; in trying to reach it to smell at it, the animal steps into the trap. Foxes, wolves and all the weasel tribe will take flesh and fish of any kind with this exception; foxes, wolves (and dogs), will not eat their own kind; weasels of every kind will. Toasted cheese forms a strong allurement for a fox. The bear will go anywhere for honey, and it is usual to smear this over a piece of pork or beef, or even upon an ear of corn, or just to smear it on the tree or stump near where the trap is set. The skunk considers mice a dainty, and raccoons will travel far for frogs, fish (broiled), salt or fresh; but an ear of corn is not disdained by him. Squirrels take Indian corn, nuts, etc. Woodchucks will take roots, corn and bread. Wild cats take flesh or fish of any kind. In the northwest they are also taken with the bark-stone bait previously described. In arranging traps for small birds, hemp-seed will be found more attractive than any other. Buckwheat is perhaps more attractive for quails than any other grain.

Old Orchards Made New.—It is very well known that the reason why peach, apple, quince and pear orchards gradually grow poorer and poorer until they cease to produce at all, is because the potash is exhausted from the soil by the plant. This potash must be restored, and the most effective way to do it is to use the following compound, discovered by a distinguished German chemist: Thirty parts of sulphate of potash; fifteen parts sulphate of magnesia; thirty-five parts salt; fifteen parts gypsum (plaster of paris); five parts chloride of magnesia. This should be roughly powdered and mixed and then mingled with barnyard manure, or dug in about the roots of the trees.

Liebig's Great Fertilizer.—This is a very judicious and sensible combination, easy to prepare, and cheap. It will prove serviceable for corn, wheat, and other cereal grains, and also for grapes. This amount will do well ap-

plied to one or two acres, and will cost not far from \$16 : Dry peat, 20 bushels ; unleached ashes, 3 bushels ; fine bone-dust, 3 bushels ; calcined plaster, 3 bushels ; nitrate of soda, 40 pounds ; sulphate of ammonia, 33 pounds ; sulphate of soda, 40 pounds. Mix numbers 1, 2 and 3 together ; then mix numbers 5, 6 and 7 in five buckets of water. When dissolved, add the liquid to the first, second and third articles. When mixed add fourth article.

Gilding Without a Battery.—Clean the silver or other article to be gilded with a brush and a little ammonia water until it is evenly bright and shows no tarnish. Take a small piece of gold and dissolve it in about four times its volume of metallic mercury, which will be accomplished in a few minutes, forming an amalgam. Put a little of this amalgam on a piece of dry cloth, rub it on the article to be gilded. Then place on a stone in a furnace and heat to the beginning of redness. After cooling it must be cleaned with a brush and a little cream of tartar ; and a beautiful and permanent gilding will be found.

Artificial Gold.—Sixteen parts of virgin platina and seven parts of copper and one part of zinc. Put these into a covered crucible, with powdered charcoal, and melt them together till the whole forms one mass, and are thoroughly incorporated together.

To Make Dies.—Take copper, zinc and silver, in equal proportions, and then melt them together, and mould into the forms you desire, and bring the same to a nearly white heat. Now lay on the things that you would take the impression of, and press it with sufficient force, and you will find that you have a perfect and beautiful impression.

To Tell when a Person will be Married.—Get a green pea-pod, in which are exactly nine peas ; hang it over the door and then take notice of the next person who comes in, who is not of the family, nor of the same sex with yourself, and if it proves an unmarried individual, you will certainly be married within that year.

Girl or Boy.—To tell which a woman will have. Write the proper names of the father and the mother, and the month she conceived with child ; count the letters in these words, and divide the amount by seven ; and then if the remainder be even, it will be a girl, if uneven it will be a boy.

Charms against Furious Beasts.—Repeat reverently, and with sincere faith, the following words, and you shall be protected in the hour of danger :

“At destruction and famine thou shalt laugh, neither shalt thou be afraid of the beasts of the earth.”

“For thou shalt be in league with the stones of the field ; the beasts of the field shall be at peace with thee.”

Charm against Trouble in General.—Repeat reverently, and with sincere faith, the following words, and you shall be protected in the hour of danger :
“He shall deliver thee in six troubles, yea in seven there shall no evil touch thee.

“In famine he shall redeem thee from death, and in war from the power of the sword.

“And thou shalt know that thy tabernacle shall be peace, and thy habitation shall not err.”

Charm against Enemies.—Repeat reverently, and with sincere faith, the following words, and you shall be protected in the hour of danger :

“Behold, God is my salvation ; I will trust, and not be afraid, for the Lord Jehovah is my strength and my song ; he also is become my salvation.

“For the stars of heaven, and the constellations thereof, shall not give their light ; the sun shall be darkened in his going forth, and the moon shall not cause her light to shine.

“And behold, at evening time, trouble ; and before the morning he is not ; this is the portion of them that spoil us.”

Charm against Peril by Fire or Water.—Repeat reverently, and with sincere faith, the following words, and you shall be protected in the hour of danger :

“When thou passest through the waters, I will be with thee, and through the rivers, they shall not overflow thee ; when thou walkest through the fire, thou shalt not be burnt, neither shall the flame kindle upon thee.”

To Make the Face Clear and Beautiful like Silver, and to remove spots, tan, pimples, blotches, etc.—Wild tansy, horse-radish and sweet milk seed as an ointment will truly do all that is above stated. It is also good for neck and hands.

To Cause Various Dreams.—Before you retire eat a little balm. Pleasant sights will appear in your dreams, as fields, gardens, trees and flowers, you feel that you see and behold the whole face of living nature. If you use oil of poplar and balm of gilead when awake, it enables you to see and behold all things in nature and to foretell things to come. Dark and troublesome dreams are brought about by eating French beans, leeks, wealbine and new red wine. You will think you are being carried into the air, with lightning and fearful apparitions.

The Magic Crystal.—Is a ball of pure virgin glass, somewhat in the shape of an egg: the method of using it is, to hold it in the palm of the right hand, retain it there from eleven to twelve o'clock at night, in a dark room, all the time concentrating your thoughts upon the object you desire to see; about twelve o'clock, the crystal becomes quite hot—now look steadily into it and pictures appear of scenes that are transpiring with friends far distant; in fact, it is asserted that the movements of any one can be known, whether husband, wife, lover or friend.

To Tell who Your Husband Will Be.—On St. Agnes' day Day.—This is to be attempted on the 21st of January, St. Agnes' Day. You must prepare yourself by a twenty-four hours' fast, touch nothing but pure spring water, beginning at mid-night on the 20th, to the same again on the 21st; then go to bed, and mind you sleep by yourself, and do not mention what you are trying to any one, or it will break the spell; go to rest on your left side, and repeat these lines three times:

St. Agnes be a friend to me,
In the gift I ask of thee;
Let me this night my husband see,

and you will dream of your future spouse; if you see more men than one in your dream, you will wed two or three times, but if you sleep and dream not, you will never wed.

Made to Throw their Clothes off.—A lamp of hare's fat set in a room and let burn, will cause the gentlemen and ladies to throw off their clothes quickly, and they will dance, laugh, and sing, as long as the oil burns.

To Renew old Letters or Papers.—Boil galls in wine, and sponge over the surface. The letters or writings will be as fresh as ever.

To Discover Things Lost, Stolen, or Hidden.—Learn the time and place the person losing was born under, and trace his horoscope. It will give the full particulars, and where to find the lost article.

Lieberg's Goldometer.—This instrument is used for the discovery of mines, minerals, treasures, etc. It is made of mercury, gold, and magnetic sand.

Increase of Milk and Butter.—If cows are given four ounces of French boiled hemp seed, it will greatly increase the quantity of milk. If pans are turned over this milk for fifteen minutes when first milked, or till cold, the same milk will give double the quantity of butter.

To Prevent Cattle, Fowls, etc., from Getting Old.—If cattle are occasionally fed a little of the extract of the June berry, it will renew or extend the period of their lives. Use in connection with the vanilla bean, and the two will produce the most wonderful results. It will act on people the same as on the animal kingdom. New flax seed frequently given to cattle, in small quantities, will make them, whether young or old, or if as poor and thin as skeletons, soon to appear fat and healthy.

To Catch Abundance of Fish, Eels, etc.—Get over the water after dark with a light, and a dead fish that has been smeared with the juice of stinking gladwin. Directly the fish will gather around in great quantities, and immense numbers of them can easily be scooped up. Another curious thing, of a like nature, is, that when a black snake is killed in the day-time, hundreds of other black snakes will gather around him at night. Or, put the oil of rhodium on the bait, when fishing with a hook, and you will always succeed. Or, take the juice of smellage or lovage, and mix with any kind of bait. As long as there remain any kind of fish you will find yourself busy pulling them out.

Cheap Houses.—Bricks eighteen inches long, eight inches thick, and twelve inches wide, may be cast in moulds, of the following substances: Sand and refuse, fourteen barrels; lime, one barrel, let it be as wet as brick clay. Thus every poor man can raise a comfortable, and even magnificent, habitation of his own, without much labor or expense.

To Make Brown Teeth White.—Apply carefully over the teeth a stick dipped in strong asseetic or nitric acid, and immediately wash out the mouth with cold water. To make the teeth even, if irregular, draw a piece of fine cord betwixt them.

Art of Transferring on Glass.—Colored or plain engravings, photographs, lithographs, water colors, oil colors, crayons, steel plates, newspaper cuts, mezzotint, pencil writing, show cards, labels—or, in fact, anything. Directions: Take glass that is perfectly clear—window glass will answer—clean it thoroughly; then varnish it, taking care to have it perfectly smooth; place it where it will be entirely free from dust; let it stand over night; then take your engraving, lay it in clear water until it is wet through (say ten or fifteen minutes), then lay upon a newspaper that the moisture may dry from the surface and still keep the other side damp. Immediately varnish your glass a second time, then place your engraving upon it, pressing it down firmly, so as to exclude every particle

of air; next rub the paper from the back, until it is of uniform thickness—so thin that you can see through it—then varnish it the *third* time and let it dry.

Materials Used for the Above Art.—Take two ounces balsam of fir to one ounce spirits of turpentine; apply with a camel's hair brush.

Paste Resembling the Diamond.—Take white sand, nine hundred parts; red lead, six hundred parts; pearl ash, four hundred and fifty parts; nitre, three hundred parts; arsenic, fifty parts; manganese, half a part. To make it harder use less lead, and if it should have a yellow tint, add a little more manganese.

Imitation Topaz.—Strass, five hundred parts; glass of antimony, twenty-one parts; purple of cassius, half a part. Fuse for twenty-four hours, and cool slowly.

Imitation of the Ruby.—Strass, eighty parts; oxide of manganese, two parts. Mix and fuse same as topaz.

Imitation Emerald.—Strass, five hundred parts; glass of antimony, twenty parts; oxide of cobalt, three parts. Fuse with care for twenty-four hours, then cool slowly.

Imitation Sapphire.—Oxide of cobalt, one part; strass, eighty parts. Fuse carefully for thirty-six hours.

Silver and Gold Solutions are merely these metals dissolved in acids, then diluted. The article to be plated is suspended in the solution, and a common galvanic battery brought into play—the negative wire in the solution, and the positive attached to the article.

To Make a Girl Fall in Love with You.

—Many young fellows are too bashful to propose to the ladies, and desire to know how they can gain their favor by magic or charms. To make a charm for this purpose, proceed as follows: Get a small phial of tincture of sandal rub, then take a lump of loaf sugar, and scoop a hole in it; drop from seven to ten drops in the hole, then fill it with sugar, so that the lump will look white on the outside. You must make a small pitcher of punch or toddy to treat the lady with, or you can make enough to treat her and her friends, if she is not alone. In making the punch, do not sweeten it enough, but make it so that more sugar will be required. When the sugar is called for, put your prepared lump into her glass.

A Beautiful Bosom.—The following preparation, very softly rubbed upon the bosom for five or ten minutes, two or three times a day, it is said, has been used with success to promote its growth:

Tincture of Myrrh	1-2 ounces.
Pimpernel Water	4 ounces.
Elder-flower Water	4 "
Musk	1 grain.
Rectified Spirits of Wine . .	6 ounces.

How to Become a Speaker or Orator.—To become eloquent upon any subject it is necessary, first to become thoroughly conversant with its nature, to weigh the views likely to be taken by others, and to enlist your own feelings in the subject you discuss or lecture upon. Now, eloquence does not consist of a mere rhapsody of words, but an expression of feelings; and however homely the words are uttered, yet, if they are consistent, explicit and from the heart, they will usually be convincing. Now, the power of the will, in determining the exact tension necessary to produce a given note, is remarkable. The natural compass of the voice is two octaves. Thus, by practice, a singer can produce ten distinct intervals between each semitone, or 240 intervals—a much less number than is ever necessary in public speaking.

How to Cause Ladies to Tell their Most Hidden Thoughts.—Cast two half cones of a mixture of sulphur and antimony, and place them in the hands of a lady, then hold before their eyes, on a line with the nose, the blade of a new knife, and get them to intently fix their attention on the object, the operator standing before her or them for fifteen to thirty minutes, when they will become unconscious, and answer any question that may be asked.

To Increase the Human Memory.—Dr. Will Bulleyn says that if snails are broken from their shells and soaked in white wine with oil and sugar, and a little anointed on the forehead each night, the memory can be so strengthened that events, even of small importance, occurring many years back, can be fully remembered. He says, also, if snails pounded with camphor, and a little flour be applied, will draw pricks or thorns from the flesh; being also good for many poisoned wounds.

How to Live a Hundred Years.—By injecting into the veins of the old the warm blood taken from the persons of those who are strong and lusty, life may be prolonged indefinitely, if there is no disorganization or alteration in the structure of the internal organs. It must, however, be borne in mind, that the operation is dangerous in itself, for if the least quantity of air be carried along with the blood, death would immediately ensue.

To See a Future Husband.—On a Midsummer eve, just after sun-set, three, five, or seven young women are to go in o a garden, in which there is no other person, and each to gather a sprig of red sage, and then, going in-to a room by themselves set a stool in the middle of the room, and on it a clean basin full of rose-water, in which the sprigs of sage are to be put, and tying a line across the room, on one side of the stool, each woman is to hang on it a clean shift, turned the wrong side outwards; then all are to sit down in a row, on the opposite side of the stool, as far distant as the room will admit, not speaking a single word the whole time, whatever they see, and in a few minutes af er twelve, each one's future husband will take her sprig out of the rose water, and sprinkle her shift with it.

To Tell what Fortune Your Husband will Have.—Take a walnut, a hazel-nut, and a nutmeg: grate them together, and mix them with butter and sugar, and make them up in'o small pills, of which exactly nine must be taken on going to bed; and according to her dreams, so will be the state of the person she will marry. If a gentleman, o' riches; if a clergyman, of white linen; if a lawyer, of darkness; if a tradesman, of odd noises and tumults; if a soldier or sailor, of thunder and lightning; if a servant, of rain.

To Tell if Any one shall Enjoy their Love or Not.—Take the number of the first letter of your name, the number of the planet, and the day of the week; put all these together, and divide them by thirty; if it be above, it will come to your mind, and if below, to the contrary; and mind that number which exceeds not thirty.

To Tell whether a Lover is False.—On receiving a love letter that has any particular declaration in it, lay it wide open; then fold it in nine folds, pin it next to your heart, and thus wear it till bed-time: then place it in your left hand glove, and lay it under your head. If you dream of gold, diamonds, or any other costly gem, your lover is true, and means what he says; if of white linen, you will lose him by death; and if of flowers, he will prove false. If you dream of his saluting you, he is at present false, and means not what he professes, but only to draw you into a snare.

A Curious Spell.—If a maid wishes to see her lover, let her take the following method: Prick the third or wedding finger of your left hand, with a sharp needle (beware of a pin), and with the blood write your own and

lover's name on a piece of clean writing paper, in as small a compass as you can, and encircle it with three round rings of the same crimson stream, fold it up, and exactly at the ninth hour of the evening, bury it with your own hand in the earth, and tell no one. Your lover will hasten to you as soon as possible, and he will not be able to rest until he sees you, and if you have quarrelled to make it up. A young man may also try this charm, only instead of the wedding finger, let him pierce his left thumb.

To Know if Your present Sweetheart will Marry You.—Let any unmarried woman take the blade-bone of a shoulder of lamb, and borrowing a pen-knife (but be sure not to mention for what purpose), on going to bed, stick the knife once through the bone, every night for nine nights in different places, repeating every night while sticking the knife, these words:

'Tis not this bone I mean to stick
But my lover's heart I mean to prick,
Wishing him neither rest nor sleep,
Till he comes to me to speak.

Accordingly at the end of the nine days, or shortly after, he will ask for something to put to a wound he will have met with during the time you were charming him.

Signs of a Courteous, Civil, and Generous Person.—1. The forehead large, plain, and smooth; 2. The eyes moist and shining; 3. The countenance expressive of joy and content; 4. The voice pleasant; 5. The motion of the body slow, etc.

Signs of a Churlish, Rough-hewn and Ill-natured Person.—1. The form of the body meagre and lean; 2. the forehead cloudy, sullen and wrinkled; 3. The eyes cast downward and malicious; 4. A nimble tongue; 5. Walking a short, quick, and uneven pace; 6. A secret murmuring to himself as he walks.

To Tell whether a Woman will have the Man She Wishes.—Get two lemon peels, wear them all day, one in each pocket: at night rub the four posts of the bedstead with them; if she is to succeed, the person will appear in her sleep, and present her with a couple of lemons, if not, there is no hope.

Tree of Lead.—Dissolve an ounce of sugar of lead in a quart of clean water, and put it into a glass decanter or globe. Then suspend in the solution, near the top, a small piece of zinc of an irregular shape. Let it stand undisturbed for a day, and it will begin to shoot out into leaves, and apparently to vegetate. If left undisturbed

for a few days, it will become extremely beautiful; but it must be moved with great caution. It may appear to those unacquainted with chemistry, that the piece of zinc actually puts out leaves; but this is a mistake, for if the zinc be examined, it will be found nearly unaltered. This phenomenon is owing to the zinc having a greater attraction for oxygen than the lead has; consequently, it takes it from the oxide of lead, which re-appears in its metallic state.

To Make Aquaria, or Artificial Fish Ponds.—One gill of litharge; one gill of plaster of Paris; one gill of dry, white sand; one-third of a gill of finely powdered rosin. Sift and keep corked tight until required for use, when it is to be made into a putty by mixing in boiled oil (linseed) with a little patent dryer added. Never use it after it has been mixed (that is, with the oil), over fifteen hours. This cement can be used for marine as well as fresh water aquaria, as it resists the action of salt water. The tank can be used immediately, but it is best to give it three or four hours to dry.

Tomato Wine.—To make tomato wine, press the juice from ripe tomatoes, then put one pound of sugar to each quart of the juice, and bottle. In a few weeks it will have the appearance and flavor of pure wine of the best kind. No alcohol is needed to preserve it, and mixed with water it makes a delightful beverage for the sick.

A Valuable Secret.—Put eight silver shillings into two ounces of nitric acid. When the silver disappears, throw into it a pint of water and four ounces of common salt. The salt will throw down a powder, which is pure silver. Now decant off the water and repeat the same washings till all the effects of the salt shall have disappeared. Now add to this white powder 2 ounces of cyanide of potassium, and three ounces of hyposulphate of soda. Now add to all this 2 quarts of pure rain water, and your silver mixture is complete.

Now you may do, by the aid of this mixture, all sorts of plating—watch-chains, rings, medals, watches, ornaments, steel, iron and German silver goods of every description, as spoons, spectacles, etc.

Hang any of these articles in the solution, suspended at the end of a strip of lead, or you can immerse the article and boil it 10 or twenty minutes, according to the thickness of the silvering that you desire. If the articles to be plated are clean, a pure and durable silver surface will be the result.

A New Alloy of Copper Resembling Gold.—Which is known as "oreide" of Gold, is composed of 100 parts (by weight) of pure copper, 17 of zinc, 6 of common magnesia, 3-60 sal. amoniac, 1-80 quick-lime and tartar.

Fumes.—The fumes of lead will make all metals malleable, while the fumes of mercury and arsenic will make all metals brittle.

To Make Gold Solution for Electro-Plating.—Dissolve 2 1-2 pennyweights of gold in a 1-4 ounce nitric acid, and 1 1-2 of muriatic acid; then evaporate to dryness, and add one ounce cyanide of potassium and 1 quart of hot rain-water. The operator must avoid breathing the fumes which ascend from the solution; they are dangerous.

German Silver.—German silver is an alloy of nickle with copper or zinc, containing in 100 parts 50 of copper 30 of zinc, and 20 of nickle. This makes the most valuable composition known as German Silver.

Common Pewter.—Melt in a crucible 7 pounds of tin, and when fused throw in one pound of lead, 6 ounces of copper and 2 ounces of zinc.

To Make Silver Solution.—Dissolve one ounce of silver in two ounces of nitric acid and 2 ounces of hot rain-water; when dissolved, add about 2 ounces of common table salt and 1 quart hot water: stir the mixture, and allow it to settle: pour off the liquor, and wash the precipitate at least four times in hot water; then add 1 ounce cyanide of potassium, 2 ounces of hyposulphate of soda and 1 quart of rain-water.

Imitation of Gold or Ring Gold.—Melt together of Spanish copper 6 pennyweights and twelve grains, fine silver, 3 pennyweights and 16 grains, to one ounce, and 5 pennyweights of gold coin.

Another.—Melt together 8 1-2 ounces of Spanish copper, 10 pennyweights of fine silver, to one ounce of gold.

Pinchback.—Put five ounces of pure copper into a crucible, expose it to the heat in a furnace, and when perfectly fused add 1 1-2 pounds of zinc. The metals will combine and form an alloy equal to jewelers' go d.

Imitation of Silver.—Three-fourths of an ounce of tin to a pound of copper will make a plate-metal that will ring the same as silver.

Silver Solder for Jewelers.—Melt together 19 pennyweights of fine silver, copper 1 pennyweight, and brass 10 pennyweights.

ROYAL TABLE OF FATE;

OR,

ORACLE OF LOVE, MARRIAGE, AND DESTINY.

A25	TABLET.										Z1
	S Y										
	A C N Q										
B15	D Z E X L W										Y21
	A P N O C D W										
C5	L Q V R S T E U C										X20
	K G L K V W T M F										
D14	S V A N M C D P R R I										W4
	O R B W X A C E N										
E10	H B I X F G S L										U24
	B H L K W V S										
F6	U O F T S V										V2
	A B W B										
G13	L O										T19
H7											S23
I18											R12
	K8	L17	M23	N9	O16	P2	Q3				

FORTUNE-TELLING TABLE.

AS USED BY THE EGYPTIAN ASTROLOGERS.

The person whose fortune is to be told, is to prick with a pin with his eyes shut, on any of the letters above; then to refer to the corresponding letter, running round the inside of the border, with which is a particular magical figure, and has reference to the Oracle in the following pages, which will determine the fortune of the inquirer.

Explanation of the Foregoing Tablet.

GOOD FORTUNE.

1. If this number is fixed upon a man, it assures him, if single, a homely wife, but rich; if married, an increase of riches, numerous children, and a good old age. To a lady, the faithfulness of her lover, and speedy marriage.

3. Very good fortune, sudden prosperity, great respect from high personages, and a letter bringing important news.

7. This number, to a woman, is wonderful in showing, if single, a handsome, rich and constant husband; and if married, a faithful partner, and who will be of a good family, as she must know she has married above her condition. To a man much the same.

8. This is a general good sign, and your present expectations will be fulfilled, and you have some on the anvil.

9. If a married man or woman draws this, if under fifty, let them not despair of a family. To the single, sudden marriage.

10. A friend has crossed the sea, but will bring home some riches, by which the parties are benefited.

12. An uncommon number, belonging to scriptural signs, and the party will have success in all their undertakings.

13. No doubt but the chooser is very poor, and thought insignificant; but let his friends assist him or her, as they are much favored.

16. A very sudden journey, with a pleasant fellow-traveller; and the result of the journey will be generally beneficial to your family.

18. A sudden acquaintance with the opposite sex which will be opposed; but the party should persevere, as it will be to his or her advantage.

21. A letter of importance will arrive, announcing the death of a relative for whom you have no very great respect, but who has left you a legacy.

22. Be very prudent in your conduct, as this number is very precarious, and much depends on yourself: it is good.

23. A very accomplished woman will be the wife of the man who chooses this figure.

24. Let the chooser of this number persevere; all his or her schemes are good, and must succeed.

BAD FORTUNE.

2. Shows the loss of a friend; bad success at law.

4. A letter announcing the loss of money.

5. The man who draws this number, let him examine

his moles, and he will find more about him than he imagines.

6. Very bad success! you may expect generally not to succeed in your undertakings.

11. I should rather suspect the fidelity of your husband or wife, if married; if single, you are shockingly deceived.

13. You want to borrow money, and you hope you will have it, but you will be deceived.

14. The old man you depend upon is going to be married, and his wife will have a child.

17. You have mixed with this company, and pretend to despise our tablet, but you rely much upon it, and you may depend upon it that you will be brought to disgrace.

19. Look well to those who owe you money, if ever so little; a letter of abuse may be expected.

20. A drunken partner, and bad success in trade; the party will never be very poor, but always happy.

25. The man or woman who chooses this unlucky number, let them look well to their conduct; justice, though slow, is sure to overtake the wicked.

Patent Chemical Compound Soap.—Soft Soap.—1 pound bleaching compound, and 1-2 pound sal soda, to be boiled in 5 gallons of water till thoroughly dissolved.

Toilet Soap.—1 pound bleaching compound, 1-4 pound sal soda, 1 ounce borax, 1 ounce tincture ammonia, 1 pound white clay, 1-2 ounce essence sassafras dissolved in 1 pint water, will make 4 pounds of soap. To be colored to fancy by adding a little vermilion, while warm.

Common Hard Soap.—1 pound bleaching compound, 1-2 pound sal soda, 1 ounce ammonia, 1 pound white clay, 2 ounces resin, 1 quart water, boil until thoroughly mixed, will make 6 pounds of common brown soap. If more color is desired, a little palm oil may be added.

Heretofore family rights to make and use this soap have never been sold for less than five dollars. White clay can be obtained from any wholesale druggist for a trifle, and bleaching compound from David S. Brown, 10 Peck Slip, New York, at five dollars for a 50-pound box.

Brass.—Put 4 1-2 pounds of copper into a crucible, expose it to heat in a furnace, and when perfectly fused add 1 1-2 pounds zinc. They will combine and form the alloy called brass.

Gold Solder.—Melt together of pure gold 12 pennyweights, pure silver 2 pennyweights, and copper 4 pennyweights.

THE SEVENTH BOOK OF MOSES, A Chain of Sacred Wonders.

And how Moses proved himself to be a greater Magician than any of the Priests, Wizards, Soothsayers, Magicians, or other Learned men among the Egyptians. And how Moses Liberated the Hebrews.

1. I, Moses, the Hebrew Lawgiver, doth now write this my Seventh Book, for the secret use of my people, even the Hebrews.

2. This Book, that the unthinking portion of mankind shall in coming time call a work of the wizards, the devil, etc., is no work of falsehood, but of sober truth in all the things wherunto it speaks.

3. And it came to pass that when I, Moses, and my people, were slaves in the land of Egypt, and were sorely oppressed by the galling yoke of the Egyptians, an unseen voice spake to me in my sleep and saith, Moses, get thee up, angels wait on thee.

4. So it came to pass after a time, and a half time, that I sat with twelve angels on the hill side next the sacred river Nile, even the great river of the Egyptians, near unto the city of Thebes. And thus, in substance, spake the twelve angels saying, Moses, thou leader of the Hebrews, from whom we have ascended, and now return again, harken unto us. Do as we teach thee, and thou shalt lead the Hebrews out of the land of Egypt and the house of bondage, and even unto a land of fruit, flowers, milk and honey.

5. And the substance of the angels' talk was thus: We are messengers from the Higher Wisdom, sent from our brethren to save the Hebrews. We tell it unto thee, that in the Substance of Twelve Growing Things and Twelve Living Things, which we teach thee how to prepare, and if rightly put together, a power is generated therefrom, that through our servant, Moses, will make Pharaoh tremble on the throne he so much dishonors, so that after a time he will let the Hebrews go, as long ago foretold by the ancient Hindoo prophets, soothsayers and magicians of the East.

6. And it was shown unto I, Moses, how and when to prepare and use certain parts of twelve different serpents, and twelve vegetable substances, which when put together under a right disposition of the Heavenly influence, doth make a Magical Compound, with which the messenger

thereof, can, as I, Moses, have often done, subvert ever the powers of nature, and so that all my desires did surely come to pass.

7. And it came to pass, that I, Moses, did walk among the Egyptians *unseen*, and did converse with them, even the high and great rulers. And the mysterious substances, which I prepared as directed by the *Twelve Disembodied Hebrew Visitors*, did work the deliverance of my brethren as was foretold.

8. And it came to pass that I was called a magician by the Egyptians. And it came to pass, as written in my other Books, that I, Moses, did confound all the wizards and other wonder workers of the Egyptians. And it came to pass that I did *make* the Egyptians think that the land of Egypt was filled with lice, flies, serpents, frogs, etc., and that this curse would remain till the Egyptians let my people go, so that great fear did come upon the Egyptians, for it came to pass with this full power of natural and celestial magic or wisdom, I could, by the force of my will, CAUSE PEOPLE TO THINK ANYTHING OR DO ANYTHING I CHOSE.

9. To the sons and daughters of Wisdom be it known, that the twelve Signs and Celestial Influences in the heavens give twelve forces or powers, to twelve certain growing things, the *substances* which, after the season of growth is over, do go to the heavens—to the power that draws them hence. And there is also twelve powers or forces of the earth, mostly in serpents, and the like, that when their lives or natural force is gone, do go back to the earth whence they came.

10. And it came to pass that, with the right commixture of these forces, a power was given me to do all wonderful things—to see all things, and to foretell all things. To see metals and precious stones in the earth or angels in the air, and to cause people to willingly act or do as I desired in all things.

11. And it shall come to pass, that many after me, shall have this same wonder working power—but hundreds of years in the future, *there shall be a beautiful maiden* in a city called Jerusalem, that one Cepheas, a Hebrew High Priest, shall fall in love with, but the Hebrew law being *against* a High Priest marrying in Judea—that he and Mary will journey into the land of Palestine, where they will marry. And a son will be born to them in the city of David, whose name shall be called Jesus, and who shall be the *full* recipient of *this* great power I now possess.

12. And it shall come to pass, that this Jesus shall grow

in the knowledge of mankind and of the heavens. He will be a teacher and a leader. He will be so, in part by nature from the earth and stars. But this mantle of mine, descending from I, Moses, to Jesus, will make him more so, and because of the wonderful things that he, *through this power shall cause to come to pass*, shall suffer death in his thirty-third year. All of which things, I Moses, do prophesy in this, my seventh book.

13. And it is given I, Moses, to know, that in the distant generations of men, that this same power shall work all wonderful things. The air shall be filled with grapes, fruits, towers, cities, animals, ships, birds, insects, vegetables, fish, lice, frogs, worms, serpents, etc., and yet it shall not be so. BUT IT SHALL APPEAR TO BE SO. And there shall fear and trembling come upon the people, and wonderful things shall come to pass thereof, and oppressors of men shall quake with fear.

14. And it will have come to pass in that beautiful Golden Age of Wisdom and of Light, much talk and words shall fly through metals, and that great iron horses, *that are not horses*, shall, with well filled chariots, drag thousands over the earth, at many furlongs an hour, so that the animals shall be jostled from their hiding places.

15. And it shall come to pass, that on the lapse of *six* periods after Abraham, of the now unknown country of the West, shall have ascended by *violent death*, that soon thereafter, mighty air ships shall sail THROUGH the HEAVENS, with thousands of delighted passengers, and with the things of exchange between one zone and another zone. And in that happy period, and after many times and parts of times, it shall come to pass, that great metal ships shall not go out upon the waters any more, because of the dangers thereof. And the earth shall become more and more, the sea less and less.

16. And long before this period (and as now), I will say unto you, that the *creeds* and the *value* of gold and silver WILL CEASE, and that mankind will no longer murder each other because of creeds or money, or flocks, or lands or precious stones. That the true mother or seed of GOLD and SILVER is the heart, or inner life of SULPHUR, without which, no gold or silver could exist. Behold, I learned this sacred mystery from the Egyptians, and I now give it to mankind, and teach it, in this my seventh book.

17. I say unto you that about the time of the ascension or Abraham, the good Hebrew of another and better age, that a plain and humble *healer* of the diseases of men will arise, and cause the great inner secret of the Egyptians, even the same that is in the womb of sulphur, to become

known among all nations. And soon thereafter, it shall come to pass, that cruelties and oppressions of mankind, through gold and silver, *SHALL CEASE.*

18. Now, be it a secret unto the Hebrews, in metaline, as in magic, that wisdom will diligently work out every good. Thus, with the *Strong Water*, let the earth of *sulphur* be burnt out, so that only the *red blood* remains, which is like unto an oil, this oil dropped on silver in fusion, does quickly transmute the same into *fine gold*. Thus, brethren, when my *hisping* tongue shall be heard no more, it shall come to pass, that I have not lived in vain.

19. And now, brethren, behold one secret in magic, and which is the key to my work upon the Egyptians. There be the essence of things celestial and terrestrial, of the *stars* and of the earth. There be vegetables, herbs, stones, metals, *serpents*, and many other things. Behold all of these have their uses. With the inner life of these did I, Moses, work out the freedom of the Hebrews.

20. And it came to pass, that Pharaoh commanded me to appear before him in the great palace of the Egyptians, at Thebes, and the third hour of the night, so that I, Moses, might be heard in behalf of the Hebrews. And, behold, when I sat with my lamp burning in the king's presence, all the *other* lamps did soon go out, and my lamp with *oil of serpents*, and for a *wick* the skin thereof, did burn on, at which the king did wonder, for even he was learned in the secrets of the older Brahmin magicians.

21. And I spoke to the king, saying, wilt thou let my people go? The king said no, I will not let the Hebrews go. Then it came to pass that the air of the chamber was made to seem suddenly filled with millions of horrible slimy serpents. Then the king spake, and said, I fear the God of the Hebrews, and I will consider, but he did not let my brethren go, but because of the fear I caused to come upon the Egyptians, the Hebrews did escape, followed by the king and the Egyptian warriors.

22. And now, brethren, as I have brought you into a land of freedom, of flowers, and of beauty, I go hence to sleep with my fathers. But ever let the *full power of natural and celestial magic* and the *secret of sulphur* and increase of *gold and silver* which to thee I leave the secret of, even the same I confounded the wise Egyptian priests and magicians with. And I, Moses, do command you, that you ever use this *great power* for the common good and freedom of mankind. For I say unto you that no bad thing can long exist, as the Egyptians now knoweth, but goodness in its very nature, brethren, is deathless and

eternal. And all that thou doest for the common good shall come back to thee again.

23. So be it unto you, my brethren. See that my works on magic and the metals die not out among you. For it is a truth as your eyes have often seen. Let my secret work on *sulphur* be the study of your wise men, for with the hidden *spirit of sulphur* laid bare, and in fusion, commixed with metals of common kind, behold, it shall not come to pass, that thee or thine shall ever want gold, lands, or flocks.

24. And the great works in natural and celestial magic, I have done before thine eyes, these many years, and the means and secrets of which I now leave with thee, be not afraid or astonished thereof. For I tell it unto thee, but for these, the Egyptians would have never let thee go. And now, brethren, I, Moses, am about to *rest*, but from yonder heavens I shall *often* return to thee, and after thee, to all coming generations of men. For I say unto thee, that the earth, like the heavens, shall be pure and beautiful at last.

25. And, brethren, it shall surely come to pass, that in a future time mankind, in the language of the ancient Brahmins, will exclaim with one accord, "*This Earth is very, very beautiful, and if we would our duty to each other do, it would soon be just as full of friendship.*"

NOTE.—There are several other professed Seventh Books of Moses. But this is the only true *verbatim et literatim* translation from the ancient Hebrew. I have here rendered the exact meaning and style of the author. We here see, that Moses was a wise and good man, that he was an *alchemist*, or chemist, a true *magician*, or magi, or philosopher of nature, which is all one and the same thing. That he was a true prophet. That he did foretell the coming of Christ, the life of America, the death of Lincoln, the progress of mechanics, art science, inventions, navigation of the atmosphere, etc., much of which has *really* come to pass.

N. B.—You are next informed by the *real* author of the Seventh Book of Moses, that he will impart the *full power of natural and celestial magic* for \$15—that it shall be compounded in perfect purity and full force, and that whoever possesses it can never know human want.

Those who are foolish enough to be blinded by this modern disciple, or false prophet, and remit \$15, receive in return a recipe for making Artificial Gold, which is given in another part of this book.

The original price of the Seventh Book of Moses was \$7, but it was finally reduced to \$1, and you now have it

complete, together with the \$15 recipe, free of charge. It is published here for the sole purpose of preventing all who read these pages from being defrauded, by purchasing it from others at a high price, it being one of the most dangerous swindles of the day.

Tricks for Horse Jockeys.—*How to make a Foundered and Spavined Horse go off Limber.*—Take tincture cayenne, 1 oz.; laudanum, 2 oz.; alcohol, 1 pint: rub the shoulders well with warm water, then rub the above on his shoulders and back bone; give him 1 oz. of laudanum and 1 pint of gin; put it down his throat with a pint bottle; put his feet in warm water as hot as he can bear it; take a little spirits of turpentine, rub it on the bottom part of his feet with a sponge after taking them out of the water; drive him about half a mile or a mile, until he comes out as limber as a rag. If he does not surrender to his pain, tie a thin cord to the end of his tongue.

How to make Old Horses appear Young.—Take tincture of assafetida, 1 oz.; tincture cantharides, 1 oz.; oil of cloves, 1 oz.; oil cinnamon, 1 oz.; antimony, 2 oz.; fenugreek, 1 oz.; fourth proof brandy, half gallon; let it stand 10 days, then give 10 drops in 1 gallon of water.

How to make a Horse appear as if Foundered.—Take a fine wire or any substitute, and fasten it around the pastern joint at night; smooth the hair down over it nicely, and by morning he will walk as stiff as if foundered.

To make a Horse fleshy in a short Time.—Feed with buckwheat bran, to which add a little of the shorts; keep in a dark stable. Half a day's drive will make a horse fatted in this way poor.

How to make a Horse stand by his Feed and not Eat it.—Grease the front teeth and roof of the mouth with common tallow, and he will not eat until you wash it out.

How to make a True Pulling Horse Baulk.—Take tincture of cantharides, 1 oz., and corrosive sublimate, 1 drachm. Mix, and bathe the shoulders at night.

How to Distinguish between Distemper and Glanders.—The discharge from the nose, if glanders, will sink in water; if distemper, it will not.

To make a Horse appear as if he had the Glanders.—Melt fresh butter and pour in his ears.

To stop Blood.—When a horse bleeds too freely from being bled in the mouth, the blood can be checked, and almost instantly stopped, by simply placing a silver dollar under his tongue.

Coloured Fires.—*For Theatrical and other purposes.*—The following recipes are in very high repute and are used extensively with extremely satisfactory results:

Crimson.—Chlorate of potassa, 4 1-2 parts; charcoal, 5 3-4 parts; sulphur, 22 1-4 parts; nitrate of strontia, 67 1-2 parts. This is burned in small earthen pots.

Emerald Green.—Boracic acid, 10 parts; sulphur, 17 parts; chloride of potassa, 73 parts.

Dark Blue.—Calcined alum and carbonate of copper, each 12 parts; sulphur, 16 parts; chlorate of potassa, 66 parts.

White Fire.—Sulphur, 13 1-4; sulphuret of antimony, 17 1-4; nitrate of potassa, 48.

In compounding either of these recipes, the ingredients must be carefully dried in an iron, and pulverized separately. They are then to be mixed, with the exception of the nitre and chlorate of potassa, in a mortar, and when a uniform mixture is obtained, the two latter ingredients are to be added and mixed carefully with a spoon, or with the pestle, avoid all knocking against the side of the mortar. The mixture may then be packed into paper boxes, not smaller than one inch in diameter and not longer than eight inches. They will burn off smoothly, and burn longer than in an open pan.

These are the recipes sold to property-men at theatres, and to other parties. A great improvement, though involving additional labor, is to substitute roll brimstone for the sulphur. The sulphur bought in powder is apt to contain free acid, and is liable to render the compound explosive. This danger is avoided by obtaining the roll brimstone and powdering it yourself.

Red Fires without Sulphur.—Nitrate of strontia, 4 parts; rosin, 1 part; chlorate of potassa, 1 part. This gives an orange color. The following gives a large, powerful flame somewhat of an orange color: nitrate of strontia, 16 parts; lycopodium, 3 parts; sugar of milk, 2 parts.

Rose Color.—Chlorate of potassa, 12 parts; nitrate of potassa, 5 parts; sugar of milk, 4 parts; lycopodium 1 part; oxalate of strontia, 1 part.

Artificial Butter.—Take either good sweet tallow or the oleine and margarine obtained from the chilling of cotton-seed oil. The latter is the way most common in this country, while so much tallow was used in England for the purpose that chandlers made an investigation to find out why they could scarcely obtain any for

their use. It is sent from England to Holland and brought back as prime Dutch butter. The crude fatty matter, either animal or vegetable, as above specified, must be first washed and ground. A solution of the acid found in the stomachs of hogs or horses is made in water kept at a temperature of 86 deg. to 104 deg. Fahrenheit, and the fat soaked until the fibrous matters contained therein are dissolved. The next step is compression between heated metal blades (or otherwise) to separate the stearine from the oleine and margarine. The stearine may be used for candles or other purposes. The other ingredients, or oily matters of the fat, must be beaten to the consistency of butter, at the ordinary temperature. Bleaching must be next resorted to for removing the dark color which the paste thus obtained is apt to leave. To do this, take one hundred parts of the freshly-prepared paste, one hundred parts of water, two parts of bicarbonate of soda, two parts of cassium, and enough annatto or carrot juice to give the desired yellow tinge. Heat all together to 86 degs. or 104 degs. Fahrenheit. It is said that consumers have actually preferred this butter to dairy butter, though not aware of the difference in manufacture, on account of its greater firmness and less liability to become soft and oily.

This butter recipe has never before been sold for less than five dollars.

Paint.—To get rid of the smell of oil paint plunge a handful of hay into a pailful of water, and let it stand in the room newly painted.

Tonics.—*Quassia*.—Is a simple tonic, and can be used with safety by any one, as it does not increase the animal heat, or quicken the circulation. Used internally, in the form of infusion, it has been found of great benefit in indigestion and nervous irritability, and is useful after bilious fevers and diarrhoea. Dose of the infusion, from one and a half to two ounces, three times a day.

Gentian.—Is an excellent tonic and stomachic; but when given in large doses, it acts as an aperient. It is used internally in all cases of general debility, and when combined with bark, is used in intermittent fevers. It has also been employed in indigestion, and it is sometimes used, combined with volatile salt, in that disease; but at other times alone, in the form of infusion. After diarrhoea, it proves a useful tonic. Used externally, its infusion is some times applied to foul ulcers. Doses, of the infusion, one and a half to two ounces; of the tincture, one to four drachms; of the extract, from ten to thirty grains

A Very Pleasant Perfume.—And also preventive against moths, may be made of the following ingredients: Take of cloves, carraway seeds, nutmeg, mace, cinnamon, and tonquin beans, of each one ounce; then add as much Florentine orris root as will equal the other ingredients put together. Grind the whole well to powder, and then put it in little bags among your clothes, etc.

Lavender Scent Bag.—Take of lavender flowers, free from stalk, half a pound; dried thyme and mint, of each half an ounce; ground cloves and carraways, of each a quarter of an ounce; common salt, dried, one ounce; mix the whole well together, and put the product into silk or cambric bags. In this way it will perfume the drawers and linen very nicely.

Lavender Water.—Take essence of musk, four drachms; essence of ambergris, four drachms; oil of cinnamon, ten drops; English lavender, six drachms; oil of geranium, two drachms; spirit of wine, twenty ounces. To be all mixed together.

Honey Water.—Rectified spirit, eight ounces; oil of cloves, oil of bergamot, oil of lavender, of each half a drachm; musk, three grains; yellow sanders shavings, four drachms. Let it stand for eight days, then add two ounces each of orange-flower water and rose water.

Honey Soap.—Cut thin two pounds of yellow soap into a double saucepan, occasionally stirring it till it is melted, which will be in a few minutes if the water is kept boiling around it; then add a quarter of a pound of palm oil, a quarter of a pound of honey, three pennyworth of true oil of cinnamon; let all boil together another six or eight minutes; pour out and let it stand till next day, it is then fit for immediate use. If made as directed it will be found to be a very superior soap.

The Hands.—Take a wine-glassful of eau-de-Cologne, and another of lemon juice: then scrape two cakes of brown Windsor soap to a powder, and mix well in a mould. When hard, it will be an excellent soap for whitening the hands.

The Teeth.—Dissolve two ounces of borax in three pints of water: before quite cold, add thereto two cakes of brown Windsor soap to a powder, and mix well in a mould. When hard, it will be an excellent soap for whitening the hands.

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tartarous adhesion, produces a pearl-like whiteness, arrests decay, and induces a healthy action in the gums.

How to get Sleep.—How to get sleep is to many persons a matter of high importance. Nervous persons who are troubled with wakefulness and excitability, usually have a strong tendency of blood on the brain, with cold extremities. The pressure of the blood on the brain keeps it in a stimulated or wakeful state, and the pulsations in the head are often painful. Let such rise and chafe the body and extremities with a brush or towel, or rub smartly with the hands, to promote circulation, and withdraw the excessive amount of blood from the brain, and they will fall asleep in a few moments. A cold bath, or a sponge bath and rubbing, or a good run, or a rapid walk in the open air, or going up and down stairs a few times just before retiring, will aid in equalizing circulation and promoting sleep. These rules are simple, and easy of application in castle or cabin, and may minister to the comfort of thousands who would freely expend money for an anodyne to promote "Nature's sweet restorer, balmy sleep!"

Love's Telegraph.—If a gentleman want a wife, he wears a ring on the *first* finger of the left hand; if he be engaged, he wears it on the *second* finger; if married, on the *third*; and on the fourth if he never intends to be married. When a lady is not engaged, she wears a hoop or diamond on her *first* finger; if engaged, on the *second*; if married, on the *third*; and on the fourth if she intends to die unmarried. When a gentleman presents a fan, flower, or trinket, to a lady with the *left* hand, this, on his part, is an overture of regard: should she receive it with the *left* hand, it is considered as an acceptance of his esteem; but if with the *right* hand, it is a refusal of the offer. Thus, by a few simple tokens explained by rule, the passion of love is expressed; and through the medium of the telegraph, the most timid and diffident man may, without difficulty, communicate his sentiments of regard to a lady, and, in case his offer should be refused, avoid experiencing the mortification of an explicit refusal.

The Art of being Agreeable.—The true art of being agreeable is to appear well pleased with all the company, and rather to seem well entertained with them than to bring entertainment to them. A man thus disposed, perhaps may not have much learning, nor any wit; but if he has common sense, and something friendly in his behavior, it conciliates men's minds more than the brightest parts without this disposition; and when a man

of such a turn comes to old age, he is almost sure to be treated with respect. It is true, indeed, that we should not dissemble and flatter in company; but a man may be very agreeable, strictly consistent with truth and sincerity, by a prudent silence where he cannot concur, and a pleasing assent where he can. Now and then you meet with a person so exactly formed to please that he will gain upon every one that hears or beholds him; this disposition is not merely the gift of nature, but frequently the effect of much knowledge of the world, and a command over the passions.

To Fatten Fowls in a Short Time.—Mix together ground rice well scalded with milk, and add some coarse sugar. Feed them with this in the daytime, but not too much at once; let it be rather thick.

To Renovate Silks.—Sponge faded silks with warm water and soap, then rub them with a dry cloth on a flat board; afterwards iron them on the *inside* with a smoothing iron. Old black silks may be improved by sponging with spirits; in this case, the ironing may be done on the right side, thin paper being spread over to prevent glazing.

Black Silk Reviver.—Boil logwood in water for half an hour; then simmer the silk half an hour; take it out, and put into the dye a little blue vitriol, or green copperas; cool it, and summer the silk for half an hour. Or, boil a handful of fig-leaves in two quarts of water until it is reduced to one pint; squeeze the leaves, and bottle the liquor for use. When wanted, sponge the silk with this preparation.

Restoring Color to Silk.—When the color has been taken from silk by acids, it may be restored by applying to the spot a little hartshorn, or sal volatile.

When Velvet gets Plushed from pressure, hold the parts over a basin of *hot* water, with the lining of the article next the water; the pile will soon rise, and assume its original beauty.

Tracing Paper.—Mix together by a gentle heat, one ounce of Canada balsam, and a quarter of a pint of spirits of turpentine: with a soft brush spread it thinly over one side of good tissue paper. It dries quickly, is very transparent, and is not greasy, therefore does not stain the object upon which it may be placed.

Pills for Gout and Rheumatism.—Acetic extract of colchicum, two grains; powdered ipecacuanha,

four grains; compound extract of colocynth, half a drachm; blue pill, four grains. Divide into twelve pills; one to be taken night and morning.

Method of Ascertaining the State of the Lungs.—Persons desirous of ascertaining the true state of their lungs are directed to draw in as much breath as they conveniently can; they are then to count as far as they are able, in a slow and audible voice, without drawing in more breath. The number of seconds they can continue counting must be carefully observed; in a consumption the time does not exceed ten, and is frequently less than six seconds; in pleurisy and pneumonia it ranges from nine to four seconds. When the lungs are in a sound condition, the time will range as high as from twenty to thirty-five seconds.

To Avoid Catching Cold.—Accustom yourself to the use of sponging with cold water every morning on first getting out of bed. It should be followed by a good deal of rubbing with a wet towel. It has considerable effect in giving tone to the skin, and maintaining a proper action in it, and thus proves a safeguard to the injurious influence of cold and sudden changes of temperature. Sir Astley Cooper said, "The methods by which I have preserved my own health are—temperance, early rising, and sponging the body every morning with cold water, immediately after getting out of bed—a practice which I have adopted for thirty years without ever catching cold."

Decalcomanie.—This recently discovered and beautiful art consists in transferring colored drawings to glass, porcelain, china, wood, silk, furniture, plaster of Paris, alabaster, ivory, paper, paper hangings, windows, tea trays, oil cloth, and all kinds of fancy articles; in short, materials of any kind, shape or size, provided they possess a smooth surface, can be decorated with Decalcomanie; the immediate result being an exact resemblance to painting by hand. The art itself is simple and ingenious, and while affording agreeable occupation to ladies, it may be made to serve many useful purposes, on account of the numerous objects which will admit of being thus ornamented.

The Materials employed in Decalcomanie are,—1. A bottle of transfer varnish for fixing the drawings. 2. A bottle of light varnish to pass over the drawings when fixed. 3. A bottle of spirit to clean the brushes, and to remove those pictures which may not be successful. 4. A piece of beaver cloth about nine inches square. 5. A paper-knife

and roller. 6. Two or three camel-hair brushes. 7. A basin of water. 8. A bottle of opaque varnish.

Instructions.—Thoroughly clean an free from grease the article to be decorated; then, having cut off the white paper margin of the drawing, dip one of the brushes into the transfer varnish, and give it a very light coat, being especially careful to cover the whole of the colored portion, but not to allow it to touch the blank paper; then lay the drawing, face downward, on the object to be ornamented, taking care to place it at once where it is to remain, as it would be spoilt by moving. If the varnish, on its first application, is too liquid, allow the picture to remain for about ten minutes to set. Moisten the cloth with water, and lay it gently on the drawing which has been previously laid in its place on the object to be decorated; then rub it over with the paper-knife or roller, so as to cause the print to adhere in every part; this done, remove the cloth, well soak the paper with a camel-hair brush dipped in water, and immediately after lift the paper by one corner, and gently draw it off. The picture will be left on the object, while the paper will come off perfectly white. Care must be taken that the piece of cloth, without being too wet, is sufficiently so to saturate the paper completely. The drawing must now be washed with a camel-hair brush, in clean water, to remove the surplus varnish, and then left till quite dry. On the following day, cover the picture with a light coat of the fixing varnish, to give brilliancy to the colors.

Use of Fruit.—Instead of standing in any fear of a generous consumption of ripe fruits, we regard them as conducive to health. We have no patience in reading the endless rules to be observed in this particular department of physical comfort. No one ever lived longer or freer from disease, by discarding the fruits of the land in which he finds a home. On the contrary, they are necessary to the preservation of health, and are therefore designed to make their appearance at the very time when the condition of the body, operated upon by deteriorating causes not always understood, requires their renovating influences.

To Clean Furs.—Strip the fur articles of their stuffing and binding, and lay them as nearly as possible in a flat position. They must then be subjected to a very brisk brushing, with a stiff clothes-brush; after this, any moth-eaten parts must be cut out, and neatly replaced by new bits of fur to match. Sable, chinchilla, squirrel, fitch, etc., should be treated as follows: Warm a quantity of new bran in a pan, taking care that it does not

burn, to prevent which it must be actively stirred. When well warmed, rub it thoroughly into the fur with the hand. Repeat this two or three times; then shake the fur, and give it another sharp brushing until free from dust. White furs, ermine, etc., may be cleaned as follows: Lay the fur on a table, and rub it well with bran made moist with warm water; rub until quite dry, and afterwards with dry bran. The wet bran should be put on with flannel, and the dry with a piece of book muslin. The light furs, in addition to the above, should be well rubbed with magnesia, or a piece of book muslin, after the bran process. Furs are usually much improved by stretching, which may be managed as follows: to a pint of soft water add three ounces of salt, dissolve; with this solution sponge the inside of the skin (taking care not to wet the fur) until it becomes thoroughly saturated; then lay it carefully on a board with the fur side downwards, in its natural position; then stretch as much as it will bear, and to the required shape, and fasten with small tacks. The drying may be accelerated by placing the skin a little distance from the fire or stove.

Caution.—The readers of this book are cautioned against being deceived by any of the "free prescription" dodges which are so extensively practised at the present day. It matters not whether they are for the cure of consumption, catarrh, or self-abuse, or for making love powders, enlarging the organs, or curing private diseases, or for any other ill which human flesh is heir to, it will invariably be found that the prescription contains one or more articles that cannot be obtained at any drug store. Consequently, the victim, unable to get it otherwise, must send to the "benevolent" quack, who never forgets to state that he can furnish it ready prepared, pure and unadulterated. Some persons spend hundreds of dollars on just such frauds, going from one to another, after swallowing quarts or gallons of the extravagant swill so benevolently sold by each one, at about a hundred times its cost.

Stringent laws have been recently passed in several States, for the purpose of suppressing the sale of articles to prevent conception, or produce abortion, however, condoms, womb-veils and other unreliable contrivances are still sold to those who have not yet learned that the only reliable and harmless method of avoiding an increase of family, is to abstain from the act of copulation, except during such times only as conception is impossible, such times being stated elsewhere in this book.

ARITHMETIC SIMPLIFIED.

Secret for Book-Keepers.—In the practice of book-keepers to transfer whole columns of sums from the day-book to the ledger, etc., etc., it will frequently be found, that, after adding up the columns in the two books, the sum total differs. Now, when such is the case, and the book-keeper wishes to ascertain whether the mistake has been made in the computation or in the extension of the single counts, he has but to subtract the lesser sum total from the larger, and divide by 9. If there be a remainder, the mistake is made in the computation; if not, it lies in the extension of the single counts, which must then be compared.

Egg Question.—A man has 3 boys; to one he gives 10 eggs; to another, 30 eggs; to another, 50 eggs. Each is to sell his eggs at the same price, and return the same money.

The first sells his at 7 for a cent; next sells at the same price 4 cents worth; next, 49 at 7 for a cent; secondly, they all sell 3 eggs at 3 cents each.

Solution.		
EGGS.	EGGS.	EGGS.
10	30	50
7	23	49
—	—	—
9	6	3
CTS.	CTS.	CTS.
1	4	7
9	6	3
—	—	—
10 cts.	10 cts.	10 cts.

Wonderful and Instructive Feats.—To write the answer to a sum before the sum is put down at all.

Let any person write one row of three figures. Then, to write answer, take 2 from right hand top figure, and bring down balance; bring down the other two figures and always place 2 at left hand, as in example; then let the other party write two rows more, and you will make second and third rows come to 9.

324
685
964
314
035
—
2323

3464
8653
9567
8343
1346
0432
1356

33461

You may let a person write down any three figures or more, add them together and place the sum of them underneath, and subtract it from first figures, he will then scratch out any one figure of the answer, and give you the remaining figures. You will then add together the figures given you, and subtract their sum from 9 or 18, or the extended multiple of 9, as in example:

225 2
 9 1
—

216

3 from 9=6 scratched out.

987 9
 24 6
—

963

15 from 18=3 scratched out.

To Produce the answer all in one figure:

12345679
 21

12345679
24691358

259259259
 3

77777777

You may let a person write down any number of figures for a multiplicand; then have the party multiply it by any two figures or more, which, when multiplied together, will produce a multiple of 9, as in the example; then let

3423
 6

20538
 3

14614

the party rub out all the upper work, except the last result; then let the party rub out any one figure of the last result, and you, by seeing and adding the remaining figures, and subtracting their sum from the next multiple of 9, may tell the figure rubbed out.

Useful and Interesting Contractions, when the multiplier is 10, 100, or 1, with any number of ciphers annexed.

RULE—Annex as many ciphers to the multiplicand as there are ciphers in the multiplier; the number so formed will be the product required.

To multiply any number composed of two figures by 11.

RULE.—Write the sum of the figures between them.

$45 \times 11 = 495$. Ans. $4+5=9$.

REMARK.—When the sum of the two figures is over 9, increase the left hand figure by the one to carry.

68×11 . Here, $6+8=14$, over 9. Ans. 748.

To multiply by any number of 9s.

RULE.—Annex as many ciphers to the multiplicand as there are 9s in the multiplier, and subtract the multiplicand.

To write down the square of any number of 9s at once, without multiplying.

RULE.—Write down as many 9s, less one, as there are 9s in the given number, an 8, as many 0s as 9s, and a 1.

What is the square of 999? Ans. 998001.

To multiply any number by two figures when the unit figure is 1.

RULE.—Multiply by the ten's figure, and set the product under the ten's figure of the multiplicand; then add.

Multiply 6357 by 41.

6357
25428

260637 Ans.

REMARK.—If ciphers intervene, as 201, 4001, etc., multiply as before, but set the product as many places to the left of the tens as there are ciphers.

To square any number containing $\frac{1}{2}$, as, $6\frac{1}{2}$, $9\frac{1}{2}$.

RULE.—Multiply the whole number by the next higher whole number and annex $\frac{1}{4}$ to the product.

To square any number ending in 5.

RULE.—Omit the 5 and multiply the number as it will then stand, by the next higher number, and annex 25 to the product.

To square any number containing $\frac{1}{4}$.

RULE.—Multiply the whole number by the next higher whole number and annex $\frac{1}{4}$ to the product.

To multiply any two *like* numbers together when the sum of the fractions is one.

RULE.—Multiply the whole number by the next higher whole number, and to the product add the product of the fractions.

REMARK.—To find the product of the fractions multiply the numerators together for a new numerator and the denominators for a new denominator.

To multiply any two like numbers together, each of which has a fraction with a like denominator, as $3\frac{3}{4}$ by $5\frac{1}{4}$, or $6\frac{3}{4}$ by $7\frac{1}{4}$, etc.

RULE.—Add to the multiplicand the fraction of the multiplier, and multiply this sum by the whole number; to the product add the product of the fractions.

To multiply any two numbers whose difference is one and the sum of the fractions is one.

RULE.—Multiply the larger number, increased by one, by the smaller number; then square the fraction of the larger number, and subtract its square from one.

To multiply any two *like* numbers together when the sum of the fraction is one.

RULE.—Multiply the whole number by the next higher whole number, after which add the product of the fractions.

To multiply any two numbers together, each of which involves the fraction $\frac{1}{2}$.

RULE.—To the product of the whole number add half their sum, plus $\frac{1}{2}$.

Multiply $3\frac{1}{2}$ by $7\frac{1}{2}$. Ans. $26\frac{1}{4}$.

Business men generally, in multiplying, only care about having the answer correct to the nearest cent—that is, they disregard the fraction. When it is a half cent or more, they call it another cent; if less than half a cent, they drop it. Therefore, to multiply any two numbers to the nearest unit we give the following

GENERAL RULE.—I. Multiply the whole number in the multiplicand by the fraction in the multiplier to the nearest unit.

II.—Multiply the whole number in the multiplier by the fraction in the multiplicand to the nearest unit.

III. Multiply the whole numbers together, and add the three products in your mind as you proceed.

REMARK.—This rule is very simple and true, and, there being no such thing as a fraction to add in, there is

scarcely any liability to error or mistake. The work can generally be done mentally, for only easy fractions *actually occur in business*.

Multiply $9\frac{1}{4}$ by $8\frac{1}{4}$. Ans. 77.

Solution.— $\frac{1}{4}$ of 9 is nearer 2 than 3, and $\frac{1}{4}$ of 8 is nearer 3 than 2. Make the nearest whole number the quotient, 2 and 3 are 5, so we simply say 8 times 9 are 72 and 5 are 77. Ans.

To multiply by an aliquot part of 100.

RULE.—Add two ciphers to the multiplicand, then take such part of it as the multiplier is part of 100.

Perpetual Calendar.—To tell on what day of the week any date will transpire for the period of three thousand years from the Christian era.

TABLE OF CENTENNIAL RATIOS.

200,	900,	1800,	2200,	2600,	3000,	ratio is	0
300,	1000,					" "	6
400,	1100,	1900,	2300,	2700,		" "	5
500,	1200,	1600,	2000,	2400,		" "	4
600,	1300,					" "	3
700,	1400,	1700,	2100,	2500,	2900,	" "	2
800,	1500,					" "	1

TABLE OF MONTHLY RATIOS.

Ratio of January is	3	Ratio of July is	2
" " February,	6	" " August,	5
" " March,	6	" " September,	1
" " April,	2	" " October,	3
" " May,	4	" " November,	6
" " June,	0	" " December,	1

REMARK.—In Leap Year the ratio in January is 2, and of February, 5. The ratio of other the months remain the same.

Explanation.—To the given year add its fourth part, rejecting the fractions. To this sum add the day of the month, then add the ratio of the century, and the ratio of the month. Divide the sum by 7; the remainder is the day of the week, counting Sunday as the first, Monday the second, etc. Of course, Saturday being the seventh day, the remainder will be a cipher.

EXAMPLE 1.—Required the day of the week for the 4th of July, 1870.

To the given year, which is.....	70
Add its fourth part, reject fractions.....	17
Add the day of the month, which is.....	4
Add the ratio of the century, 1800, which is...	0
Add the ratio of the month, July, which is....	2
Divide by.....	7)93

We have 2 remainder, or the 2d day of the week, which is Monday.

2. The Declaration of Independence was signed July 4th, 1776. What was the day of the week?

To the given year, which is.....	76
Add its fourth part, rejecting fractions.....	19
Add the day of the month, which is.....	4
Add the ratio of the century, 1700, which is...	2
Add the ratio of the month, July, which is...	2
Divide by.....	7)103

We have 5 remainder, or Thursday, the 5th day of the week.

N. B.—By committing these ratios to memory and performing additions, etc., mentally the day can be told almost instantly, and so mysterious does it appear to a majority of people, that they readily bet that it cannot be done.

Table of Multiples.—For the practical convenience of those who have occasion to refer to mensuration, we have arranged the following useful table of multiples. It covers the whole ground of practical geometry, and should be studied carefully by those who wish to be skilled in this beautiful branch of mathematics.

Diameter of a circle $\times 3.1416$ = circumference.
Radius of a circle $\times 6.283185$ = circumference.
Square of the radius of a circle $\times 3.1416$ = area.
Square of the diameter of a circle $\times 0.7854$ = area.
Square of the circumference of a circle $\times 0.07958$ = area.
Half the circumference of a circle \times by half its diameter = area.
Circumference of a circle $\times 0.159155$ = radius.
Square root of the area of a circle $\times 0.56419$ = radius.
Circumference of a circle $\times 0.31831$ = diameter.
Square root of the area of a circle $\times 1.12838$ = diameter.
Diameter of a circle $\times 0.86$ = side of inscribed equilateral triangle.

Diameter of a circle $\times 0.7071$ = side of an inscribed square.
Circumference of a circle $\times 0.225$ = side of an inscribed square.
Circumference of a circle $\times 0.282$ = side of an equal square.
Diameter of a circle $\times 0.8862$ = side of an equal square.
Base of a triangle \times by $\frac{1}{2}$ the altitude = area.
Multiplying both diameters and .7854 together = area of an ellipse.
Surface of sphere \times by 1-6 of its diameter = solidity.
Circumference of a sphere \times by its diameter = surface.
Square of the diameter of a sphere $\times 3.1416$ = surface.
Square of the circumference of a sphere $\times 0.3183$ = surface.
Cube of the diameter of a sphere $\times 0.5236$ = solidity.
Cube of the radius of a sphere $\times 4.1888$ = solidity.
Cube of the circumference of a sphere $\times 0.016887$ = solidity.
Square root of the surface of a sphere $\times 0.56419$ = diameter.
Square root of the surface of a sphere $\times 1.772454$ = circumference.
Cube root of the solidity of a sphere $\times 1.2407$ = diameter.
Cube root of the solidity of a sphere $\times 3.8978$ = circumference.
Radius of a sphere $\times 1.1547$ = side of inscribed cube.
Square root of ($\frac{1}{2}$ of the square of) the diameter of a sphere = side of inscribed cube.
Area of its base \times by $\frac{1}{3}$ of its altitude = solidity of a cone or pyramid, whether round, square, or triangular.
Area of one of its sides $\times 6$ = surface of a cube.
Altitude of trapezoid $\times \frac{1}{2}$ the sum of its parallel sides = area.

Table Showing Difference of Time at 12 O'clock (Noon) at New York.

New York.....	12.00 M.	Boston.....	12.12 P. M.
Buffalo.....	11.40 A. M.	Quebec.....	12.12 "
Cincinnati.....	11.18 "	Portland.....	12.15 "
Chicago.....	11.07 "	London.....	4.55 "
St. Louis.....	10.55 "	Paris.....	5.05 "
San Francisco..	8.45 "	Rome.....	5.45 "
New Orleans...	10.56 "	Constantinople..	6.41 "
Washington....	11.48 "	Vienna.....	6.00 "
Charleston.....	11.36 "	St. Petersburg..	6.57 "
Havana.....	11.25 "	Pekin.....	12.40 A. M.

IMPORTANT TO THE LADIES.

The Dress and the Complexion.

It is not the material worn, but the judicious choice of colors, which indicates the true lady. Beauty is often diminished by an improper selection and arrangement of the hues of the dress, while an increase of the natural charms may always be secured by the artistic application and grouping of harmonizing tints. As nature has withheld from many the power of at once selecting such tints, we hope in some measure to make up for her parsimony by stating with brevity and simplicity the maxims which good taste lays down in this respect.

And first, it is necessary in the choice of colors for every lady to consider carefully which best suit her own complexion. In a general way we divide complexions into the *Blondes* and the *Brunettes*. Blondes, again, are either *fair* or *ruddy*; and brunettes *pale* or *florid*. We shall describe each of these in turn, and mention what colors are the most becoming.

The Fair Blonde.—The *Fair Blonde* has a delicate white skin, light hair, ranging in color from golden hue to yellow or orange-brown, and eyes of gray or light blue. This type, in periods of buoyant health, may have slight tones of rose on her cheeks, and a richer tint on the lips.

Let us consider what is required to enhance the beauty of this type. In the complexion itself rose-color or red is wanting. The hair should have a more decided hue, or, if its own hue is objectionable, a change for the better is desirable.

Of all colors for the dress, *Green* is most favorable to the *Fair Blonde*, because it imparts to the delicate flesh white of the complexion a tint of red, forming by union an agreeable rose-color.

Delicate Green is most suitable, being a good contrast both to the face and hair, especially if the hair be golden.

From this we learn that the most becoming colors to associate with green are red, orange, and gold color. Green and gold form a rich harmony. A scarlet is more agreeable with green than a crimson-red; but if a red inclining to crimson be used, orange or gold color should be added.

Green may be associated with shades of itself, but the combination is not effective unless enlivened by other harmonious colors.

A *Green* bonnet is suitable to the *Fair Blonde*; it may have a small proportion of rose-color in its trimmings associated with white, and a feather. Too much white, however, with green, produces a cold effect.

Orange or gold color may be substituted for pink; so also may be red; but neither must be placed in juxtaposition with the face. A small proportion of orange in a green bonnet is to be recommended when the eyes of the wearer are blue.

A few shades of red, orange, and yellow-green (autumnal tints) when not too dark, improve a green bonnet.

Dark Green is not so favorable to the *Fair Blonde* as *Delicate Green*; being so dark in comparison with the complexion, it neutralizes its own influence—that is, as a green it gives its complementary color, red, and as a dark color it reduces the complexion by decided contrast.

Blue is highly favorable to the *Fair Blonde*, as it imparts an orange tint, which combines in an agreeable manner with the delicate white and flesh tints of the complexion. The *Fair Blonde* has naturally traces of orange color on the skin, and an intensifying of this natural tint is in most cases very pleasing. The blue used must be light, and not too positive.

As blue is the perfect contrast of orange, it agrees well with golden or orange-brown hair. Thus it is that a blue head-dress is so becoming with light hair. To give proper value to blue by gaslight, a little white or very pale blue is required in juxtaposition. If green be introduced in a blue head-dress, in the form of leaves, for instance, it should be placed as near the face as possible.

A *Light Blue* bonnet, for the reasons given, is very suitable to the *Fair Blonde*. It may be trimmed with white or black, and small portions of yellow, orange, straw color, or stone color, but must not be ornamented with purple or pink flowers, for both form harmonies with blue, and are unsuitable to fair complexions.

A *Turquoise Blue* bonnet may be trimmed with fawn, gray, drab, or nankin.

The colors particularly to be avoided by the *Fair Blonde* are *yellow*, *orange*, *red*, and *purple*. The latter may be used in its light shades of *lilac*, but is even then trying to the complexion, although not to an important degree if separated from positive juxtaposition by an edging of tulle, or similar trimming.

The injurious influence of lilac is much lessened when associated with its harmonizing colors, such as cherry, scarlet, light crimson, gold, or gold color. On no account must green be coupled with lilac, as it forms a positive discord.

A small proportion of light purple is agreeable in a head-dress for light hair, but must not be placed near the skin.

Neutral Colors accord well with a fair complexion; when not too dark, they, as a rule, give value to the natural complexion; when dark, they reduce the tone by contrast. The best neutrals for the *Fair Blonde* are *gray, fawn, slate, drab*, and some shades of *brown*.

Before we proceed to treat of *Black* as regards its own value with the complexion, we may remark that, associated in trimmings (such as narrow ribbons, braided work, or lace) with any of the above colors, it has a tendency to heighten their effect, especially by gaslight. This is caused by the power black has to absorb light.

Black, although sad in its effect, and the acknowledged garb of mourning, is nevertheless highly favorable to a *Fair Blonde* who has a considerable amount of healthy color, because it increases the rose of the complexion. It has a somewhat disadvantageous effect on pale skins.

No delicate color can be associated with black without appearing lighter in tone.

To remove the gloomy or sombre effect of black, colors should be added in trimmings, such as the following: blue, cherry, drab, mulberry, or lilac. Cherry and lilac should be used very sparingly for fair complexions. White is suitable with black, but is cold and harsh without some color be added. Red must not be used with black, as it gives it a rusty tinge.

A black bonnet agrees well with a fair complexion, and may be ornamented with white and rose-color or with white alone. Rose must be kept well away from the skin. White feathers are a great improvement to a black bonnet.

White is similar in its effects to black; it heightens the natural rose of the face by contrast, and increases the paleness of a pale skin by powerful reflection.

White is suitable to every complexion which has an agreeable natural tone, but perhaps to none more so than to the *Fair Blonde* with a healthy color. Small quantities of bright colors may be added to a white dress with pleasing effect, and they will not injure the complexion if kept low down and well grouped.

We remarked that white increases the paleness of a pale skin; this objectionable influence may be considerably neutralized by a green or blue wreath, brought well towards the face.

A white bonnet, when made of semi-transparent materials, such as tulle, crape, or aerophane, is suitable to this type, and may be ornamented to advantage with white and blue flowers.

The Ruddy Blonde.—The *Ruddy Blonde* has a full-toned complexion, somewhat inclining to positive rose-red or carnation, with dark blue or brown eyes and brown hair. This type is much subjected to an increase of color in times of exercise or excitement.

The colors described as suitable for the *Fair Blonde* are, generally speaking, suitable for the type now under consideration; but their tones, and in some cases their hues, must be altered.

As a rule, the *Ruddy Blonde* may use more freedom in the selection of colors than the *Fair Blonde*; her complexion, not being of so delicate a nature, is less sensitive. From the fact that the hair peculiar to this type is the medium between golden and black, and that the tints of the complexion are high and positive, rich and moderately dark colors in dress are to be recommended.

As in the fair type, *green* is one of the best colors for the *Ruddy Blonde*, but in the present instance delicate green is not so suitable as dark green. When the complexion is of a light color, and can receive more red without becoming over-charged, a rich full-toned green may be adopted, such as a grass, or moss-green, which, although sufficiently bright to yield color to the skin, is not a contrast powerful enough to bleach it.

A bright green bonnet is highly suitable to the *Ruddy Blonde* whose complexion is not overcharged with rose. When highly colored, the effect of the green should be neutralized by the addition of rose, scarlet, orange, or white flowers.

Blue is advantageous to the *Ruddy Blonde*, giving the complexion an agreeable tint. The orange which blue casts upon the skin is not itself perceptible, as it unites with the rose and flesh tints, forming a fresh and healthy color.

Blue follows the same rule as green, that is, it must be used deeper with complexions of full color than with those of lighter tint.

The best colors to associate with rich blue are orange, salmon, and chocolate. Both white and black harmonize well with blue.

A blue bonnet agrees well with the *Ruddy Blonde*, and may be trimmed with black, white, or any of the above colors, in small quantities.

A blue wreath or head-dress suits full-toned brown hair well, giving it an increase of orange, which is one of its constituents.

The same colors must be avoided by the *Ruddy Blonde* that are pointed out as injurious to the *Fair Blonde*.

Perhaps of all colors the most difficult to introduce in

dress is *violet*, its effect upon the complexion being so unsatisfactory. It causes all skins to appear yellow, and none can receive that color without at once looking sickly and disagreeable.

A *violet* bonnet, trimmed in front with yellow and some semi-transparent material, may be rendered pleasing.

As *violet* becomes positively lost in artificial light, it is totally unsuited to be introduced in evening dress.

The *Neutral Colors* are generally suitable to the *Ruddy Blonde*. When of medium intensity, they leave the natural hue of the complexion almost uninfluenced; when light, they increase its color; when dark, they reduce it by contrast. The most agreeable dark neutrals are russet, slate, gray, maroon, and all the hues and shades of brown; the most pleasing light neutrals are gray, drab, fawn, and stone color.

The remarks we made respecting *White* and *Black*, in connection with the former type, apply in every way to them in connection with the *Ruddy Blonde*.

The Pale Brunette.—The *Pale Brunette* type has a pale skin, perhaps in some instances having a trace of sallowness, with dark brown hair, at times approaching to black, and eyes of a deep brown or brown-black hue.

The powerful contrast which exists between the tint of the complexion and the hue of the hair and eyes, shows that either light or very dark colors will suit the *Pale Brunette* better than medium tints—the light harmonizing with the complexion and the dark with the hair and eyes.

We thus follow Nature, adopting her own satisfactory coloring, and sustaining her effective contrast. The tints chosen as analogous to the complexion remain, like it, in contrast with the hue of the hair and eyes; those selected as analogous to the latter sustain the contrast with the tint of the complexion.

To adopt colors of medium intensity between the skin and hair is injurious to the *Pale Brunette*, because they have a tendency to reduce the expression, which is the the greatest charm of the type.

Black, analogous to the hue of the hair and eyes, is highly favorable to the *Pale Brunette*, contrasting in the most perfect manner with the complexion, as well as purifying and giving value to its natural tints.

Almost all the shades of *Dark Brown*, which stand, as far as analogy is concerned, in the same position in reference to the hair as black, are, like it, very suitable.

Claret, *Dark Russet* and *Crimson* are suitable to this type, but not so much so as black or brown.

Dark Blue, *Green* or *Violet* may be used, but not with

complexions having the slightest trace of yellow. The nearer these colors approach black, the more suitable they become; positive, blue, green, or purple must be avoided.

White, analogous to the tint of the skin, is very favorable to the *Pale Brunette*, and enhances the richness of the hair and eyes. For evening wear nothing surpasses white, as it is rendered particularly pleasing by the yellow cast it receives from artificial light.

The union of yellow and white is agreeable for evening dress, lighting up well; but it is dull and poor for day costume.

Gold Color or *Maize* is most suitable to the *Pale Brunette*; it forms an agreeable contrast to the eyes and hair, deepening their tone; and it neutralizes any unpleasant sallowness which may exist in the complexion.

The Florid Brunette.—The most perfect of all the types of female beauty is that of which we are about to speak.

The *Florid Brunette* has a rich-toned skin, inclining in some cases to the olive, in others to the copper-colored complexion, with more or less deep redness about the cheeks and lips. The eyes of this type are black, the hair a jet or blue black.

The complexion peculiar to the *Florid Brunette* may be said to consist of a light subdued yellow or orange-brown, and the portions which display color are more of a positive red than a rose color, as in the blonde types.

We may observe that in the complexion of this type tones of yellow, orange, and red predominate, which harmonize together by analogy, and with the hair and eyes, which are black, by contrast.

As the *Florid Brunette* displays naturally an agreeable group of harmonizing tints, care must be taken not to weaken the harmony by the use of objectionable colors. At the same time, it is advisable to neutralize any unpleasant tint which the complexion may contain, such as too much yellow, which has a decided tendency to give a sallow and unhealthy cast to the skin.

Yellow, *Maize*, and *Gold Color* suit the *Florid Brunette*, because, while they contrast in a highly favorable manner with the hair and eyes, intensifying them by the addition of purple, they harmonize by analogy with the tints of the complexion, and neutralize, to a considerable degree, any superabundance of yellow they may naturally contain.

When the complexion displays more orange than yellow in its tints, an increase of red is given to it by the use of yellow or maize in dress.

A *Yellow* bonnet is favorable to this type; but, as it approaches near to and surrounds the face, it should have a considerable proportion of its influence neutralized; this may be done by the introduction of violet, purple, or deep blue flowers, kept away from contact with the skin.

Orange, although it may be said to suit Brunettes with more or less positive orange in their complexions, is too brilliant and gaudy to be used in dress, save in very small proportions.

Red, Scarlet, Bright, Crimson, Magenta, and all brilliant colors of the like class, follow the same rule as orange, suiting some complexions containing red, which it is advantageous to neutralize, but being too bright for general costume.

A *Scarlet* head-dress is particularly suitable to black hair, intensifying it by contrast, and by the addition of a purple hue.

Dark Red is favorable to complexions which have too much natural red, because, besides its tendency to neutralize the color of the skin, it reduces it by contrast.

Violet is unsuitable to the *Florid Brunette* unless its injurious influence be destroyed by the addition of yellow.

A *Violet* bonnet may be rendered very pleasing by being trimmed with a quantity of pale yellow flowers, such as primroses. The flowers contrast with the violet of the bonnet, and accord well with the complexion.

Most medium-toned *Neutrals*, such as *brown, slate*, and *gray*, are unfavorable to this type: the very darkest shades of these colors, however, are suitable to some full-toned complexions. *Silver Gray* is also suitable to complexions with a moderate amount of color.

Black contrasts well with the complexion of the *Florid Brunette*, although not so perfectly as with that of the previous type. It enhances the red by reducing the lighter tints of the skin; but it has no power to neutralize any objectionable color that may exist.

A *Black* bonnet, although not so suitable to the Brunette as to the Blonde, is, nevertheless, agreeable in its effect. It may be ornamented with white, red, orange, or yellow trimmings.

White is more favorable to the *Florid Brunette* than black, and accords well with all complexions. A white dress may be ornamented to advantage with scarlet, orange, or yellow.

A *White* bonnet, which is highly suitable to this type, should have trimmings of red, orange, or yellow; red or orange is to be preferred, yellow and white having a weak effect by daylight.

Harmony of Color.—In costume, nothing is more common than to see tints employed together which are discordant; for example, purple and green. Now, be the dress or bonnet ever so well made, and the wearer ever so beautiful, the effect of such ignorance will be unpleasant in the extreme.

Every color has its perfect harmony, which is called its contrast, and also other colors which harmonize with it in different degrees. When two colors are associated which do not accord, the addition of a third may make a harmonious group. The same rule holds good with three or more colors.

There are two kinds of harmony acknowledged in the grouping of colors, namely the *harmony of contrast* and the *harmony of analogy*.

When two colors which are dissimilar are associated agreeably, such as blue and orange, or lilac and cherry, they form a *harmony of contrast*. And when two distant tones of one color are associated, such as very light and very dark blue, they harmonize by *contrast*. Of course, in the latter instance the harmony is neither so striking nor so perfect.

When two colors are grouped which are similar to each other in disposition, such as orange and scarlet, crimson and crimson-brown, or orange and orange-brown, they form a *harmony of analogy*. And if two or more tones of one color be associated, closely approximating in intensity, they harmonize by *analogy*.

The harmonies of contrast are more effective, although not more important, than those of analogy; the former are characterized by brilliancy and decision, while the latter are peculiar for their quiet, retiring, and undemonstrative nature. In affairs of dress both hold equal positions; and in arranging colors in costume, care must be taken to adopt the proper species of harmony.

The simplest rules to be observed are the following: 1st, When a color is selected which is favorable to the complexion, it is advisable to associate with it, tints which will harmonize by analogy, because the adoption of contrasting colors would diminish its favorable effect. 2d, When a color is employed in dress which is injurious to the complexion, contrasting colors must be associated with it, as they have the power to neutralize its objectionable influence.

We will take an example illustrative of the first rule. Green suits the blonde, and when worn by her, its associated colors should be tones of itself (slightly lighter or darker), which will rather enhance than reduce its effect.

As an example of the second rule, we may take violet

which although unsuitable to brunettes, may be rendered agreeable by having tones of yellow or orange grouped with it.

Colors of similar power which contrast with each other mutually intensify each other's brilliancy, as blue and orange, scarlet and green. When dark and very light colors are associated, they do not intensify each other in the same manner; the dark color is made to appear deeper, and the light to appear lighter, a dark blue and straw color, or any dark color and the light tints of the complexion.

Colors which harmonize with each other by analogy reduce each other's brilliancy to a greater or less degree; as white and yellow, blue and purple, black and brown.

In dress it is objectionable to associate together different hues of one color; for instance, yellow-green and blue-green, or orange-brown and purple-brown. Care must therefore be taken in selecting different tones of a color to see that they belong to the same scale.

There is another fact we wish to bring before our readers ere we close our remarks on the harmony of color, namely, that tints which accord by daylight may appear unharmonious by artificial light, and *vice versa*: thus, purple and orange harmonize by day, but are disagreeable by gaslight; and white and yellow, which are unsatisfactory by daylight, are suitable for evening dress.

There are many colors which lose much of their brilliancy and hue by gaslight, and are therefore unserviceable for evening costume; of this class we may enumerate all the shades of purple and lilac, and dark blues and greens. Others gain brilliancy in artificial light, as orange, scarlet, crimson, and light browns and greens. It is advisable that all these circumstances should be considered, in the selection of colors for morning and evening costume.

Our readers will find the following list of harmonious groups of service in the arrangement of colors in dress; we have given the most useful as well as the most agreeable combinations:

Blue and gold (or gold color), a rich harmony.
 Blue and orange, a perfect harmony.
 Blue and crimson harmonize, but imperfectly.
 Blue and pink, a poor harmony.
 Blue and salmon color, an agreeable harmony.
 Blue and lilac, a weak harmony.
 Blue and drab harmonize.
 Blue and stone color harmonize.
 Blue and fawn color. a weak harmony.

Blue and white (or gray) harmonize.
 Blue and straw color harmonize.
 Blue and maize harmonize.
 Blue and chestnut (or chocolate) harmonize.
 Blue and brown, an agreeable harmony.
 Blue and black harmonize.
 Blue, scarlet, and purple (or lilac) harmonize.
 Blue, orange, and black harmonize.
 Blue, orange, and green harmonize.
 Blue, brown, crimson and gold (or yellow) harmonize.
 Blue, orange, black, and white harmonize.
 Red and gold (or gold color) harmonize.
 Red and white (or gray) harmonize.
 Red, orange, and green harmonize.
 Red, yellow (or gold color), and black harmonize.
 Red, gold color, black and white harmonize.
 Scarlet and purple (or lilac) harmonize.
 Scarlet and blue harmonize.
 Scarlet and orange harmonize.
 Scarlet and slate color harmonize.
 Scarlet, black, and white harmonize.
 Scarlet, blue, and white harmonize.
 Scarlet, blue, and gray harmonize.
 Scarlet, blue, and yellow harmonize.
 Scarlet, blue, black, and yellow harmonize.
 Crimson and gold (or gold color), a rich harmony.
 Crimson and orange, a rich harmony.
 Crimson and maize harmonize.
 Crimson and purple harmonize.
 Crimson and black, a dull harmony.
 Crimson and drab harmonize.
 Crimson and brown, a dull harmony.
 Yellow and purple, an agreeable harmony.
 Yellow and blue harmonize, but cold.
 Yellow and violet harmonize.
 Yellow and lilac, a weak harmony.
 Yellow and chestnut (or chocolate) harmonize.
 Yellow and brown harmonize.
 Yellow and red harmonize.
 Yellow and crimson harmonize.
 Yellow and white, a poor harmony.
 Yellow and black harmonize.
 Yellow, purple, and crimson harmonize.
 Yellow, purple, scarlet, and blue harmonize.
 Green and gold (or gold color), a rich harmony.
 Green and yellow harmonize.
 Green and orange harmonize.
 Green and scarlet harmonize.
 Green, scarlet, and blue harmonize.

Green, crimson, blue, and gold (or yellow) harmonize.
 Orange and chestnut harmonize.
 Orange and brown, an agreeable harmony.
 Orange, lilac, and crimson harmonize.
 Orange, red, and green harmonize.
 Orange, blue, and crimson harmonize.
 Orange, purple, and scarlet harmonize.
 Orange, blue, scarlet, and purple harmonize.
 Orange, blue, scarlet, and claret harmonize.
 Orange, blue, scarlet, white, and green harmonize.
 Purple and gold (or gold-color), a rich harmony.
 Purple and orange, a rich harmony.
 Purple and maize harmonize.
 Purple and blue harmonize.
 Purple and black, a heavy harmony.
 Purple and white, a cold harmony.
 Purple, scarlet, and gold color harmonize.
 Purple, scarlet, and white harmonize.
 Purple, scarlet, blue, and orange harmonize.
 Purple, scarlet, blue, yellow, and black harmonize.
 Lilac and gold (or gold color) harmonize.
 Lilac and white, a poor harmony.
 Lilac and gray, a poor harmony.
 Lilac and maize harmonize.
 Lilac and cherry, an agreeable harmony.
 Lilac and scarlet harmonize.
 Lilac and crimson harmonize.
 Lilac, scarlet, and white (or black) harmonize.
 Lilac, gold color, and crimson harmonize.
 Lilac, yellow (or gold), scarlet, and white harmonize.
 White and gold color, a poor harmony.
 White and scarlet harmonize.
 White and crimson harmonize.
 White and cherry harmonize.
 White and pink harmonize.
 White and brown harmonize.
 Black and white, a perfect harmony.
 Black and orange, a rich harmony.
 Black and maize harmonize.
 Black and scarlet harmonize.
 Black and lilac harmonize.
 Black and pink harmonize.
 Black and slate color harmonize.
 Black and brown, a dull harmony.
 Black and drab (or buff) harmonize.
 Black, white (or yellow), and crimson harmonize.
 Black, orange, blue, and scarlet harmonize.

The Expression of Colors.—There is a language of colors. They speak to the eye as strains of music to the ear, and produce in us peculiar trains of ideas and sentiments. A witty Frenchman says that he noticed quite a change in his wife's conversation when he furnished her rooms in crimson in the place of blue. We will briefly mention what effect is exerted on the mind by each of the primary and secondary colors—blue, red, yellow, orange, purple, and green.

Blue is a cold and retiring color, and its effect upon the mind is of a quiet, soothing, yet attractive nature. Goethe remarks: "As the high heavens, the far-off mountains, look to us blue, so a blue superficiality seems to recede from us. As we would fain pursue an attractive object that flees from us, so we like to gaze at the blue—not that it urges itself upon us, but that it draws us after it." It is symbolical of divinity, intelligence, sincerity, and tenderness.

"Long, Pity, let the nations view,
 Thy day-worn robes of tenderest blue."

COLLINS.

In accordance with the law of contrast, blue is most suitable for summer costume, being peculiarly a winter color, and by nature cold and retiring.

Red is a strong, ostentatious, and warm color; and being so beyond every other, it is therefore the fit symbol of war, pomp, and power.

"While Mars, descending from his crimson car,
 Fans with fierce hands the kindling flames of war."
 HALLER.

"Thy ambition,
 Thou scarlet sin, robbed this bewailing land
 Of noble Buckingham."
 SHAKESPEARE.

From its hot and fiery nature, it is expressive of anger and the ardent passions.

"Change the complexion of her maid-pale peace
 To scarlet indignation."

"Beaufort's red sparkling eyes blab his heart's malice."
 SHAKESPEARE.

"Spreads the red rod of angry penitence."
 "Celestial rosy red, Love's proper hue."

MILTON.

Of all colors, red and its modified hues are most suitable for winter costume. The warm, pleasing effect of a scarlet cloak on a cold winter day is well known.

Yellow is the color nearest approaching to light, and is most advancing and brilliant, either alone or in connection with other colors. As a rule, positive yellow should be sparingly used in dress, preference being given to its modified hues, such as gold color, maize, and primrose. Yellow is the common symbol of envy and other malignant passions. Shakespeare, alluding to jealousy, says —

"I will possess him with *yellowness*."

"And Jealousie,

That wered of *yellow* colors a gerland."

CHAUCER.

The effect of yellow upon the mind is of a bright, gay, gladdening nature, owing to its likeness to light, both natural and artificial. Yellow is sometimes employed to express the richness of autumn, and also the season itself, although deeper and richer colors are more suitable, as russets and browns.

"Two beauteous springs to *yellow* autumn turned."

SHAKESPEARE.

"The *yellow* harvest's countless seed."

BYRON.

In dress, yellow is most suitable for spring and early summer.

ORANGE is a warm, prominent color, and both in nature and art appears to the best advantage when in small quantities, and associated with its contrasting colors, blue and purple. Orange is the medium color between red and yellow, being produced by a union of both, and is similar to them in its properties and expression.

In dress, orange is most suitable for winter or early spring.

PURPLE is the most retiring of all rich colors; it is composed of red and blue, but is not their medium color, being heavier in its effect than the latter. Purple is symbolical of dignity, state, and regal power; it is a color frequently adopted for mourning, and is expressive of gravity, sorrow, and sadness.

"The pale violet's dejected hue."

AKENSIDE.

"Shall we build to the *purple* of pride?"

KNOWLES.

Purple is suitable for winter, spring, and autumn costume.

GREEN is a cool, calm, and refreshing color. It is composed of blue and yellow, and holds a medium station between them. To the human eye there is no color so grate-

ful as green, being a temperate and retiring, as well as a most beautiful and cheerful color.

Green is the peculiar garb of spring. Nature displays it at that season alone in freshness and vigor. It is the symbol of youth, mirth, gladness, tenderness, and prosperity.

"While virgin Spring, by Eden's flood
Unfolds her tender mantle *green*."

BURNS.

"The violets now
That strew the *green* lap of the new-coming spring,"

SHAKESPEARE.

"That yon *green* boy shall have no sun to ripe
The bloom that promiseth a mighty fruit."

"My salad days,

When I was *green* in judgment."

SHAKESPEARE.

"The *green* stem grows in stature and in size,
But only feeds with hope the farmer's eyes."

DRYDEN.

Green is most suitable for late summer or autumn costume, being fresh and grateful at a season when Nature arrays herself in bright and burning colors.

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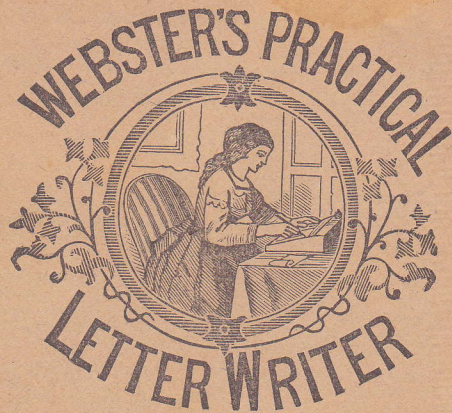
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